

Service Manual

Combination Camera
WV-CS400



SPECIFICATIONS

Combination Camera

Power Source :	220 - 240V AC, 50Hz 12W
Ambient Operating Temperature :	-10°C - +50°C (14°F - 122°F)
Dimensions :	130 (D) x 195 (H) mm
Weight :	2 kg

Camera

Pick-up Device :	1/3" CCD with 752 (H) x 582 (V) pixels
Synchronization	Internal/Line-lock/VD2
Horizontal Scanning Frequency :	15.625 kHz
Vertical Scanning Frequency :	50 Hz
Video Output :	1.0 V[p-p] PAL composite/75 Ω
Horizontal Resolution :	More than 480 lines at centre
Vertical Resolution :	More than 400 lines at centre
Signal-to-noise :	48 dB (AGC OFF) at weight ON
Minimum Illumination :	3 lx
Zoom Speed :	Approx. 6 sec. (TELE/ WIDE) at Manual
Focus Speed :	Approx. 5 sec. (FAR/NEAR) at Manual
Iris :	Auto (Open / Close is possible)/MANUAL
Maximum Aperture Ratio :	1 : 1.2 (WIDE) - 1.9 (TELE)
Focal Length :	5 - 50 mm
Electronic Shutter :	1/50 (OFF), 1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000
Back Light Compensation :	Normal/Automatic/Preset mode
Zoom Ratio :	10 times
Focus Ratio :	F1.2 - 22

Panasonic

© 1996 Matsushita Communication Industrial Co., Ltd.
All rights reserved. Unauthorized copying and
distribution is a violation of law.

WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.

It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.

Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.



CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN



CAUTION:
TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK). NO USER
SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE
PERSONNEL.



This symbol warns the user that uninsulated voltage within the unit may have sufficient magnitude to cause electric shock. Therefore, it is dangerous to make any kind of contact with any inside part of this unit.



This symbol alerts the user that important literature concerning the operation and maintenance of this has been included. Therefore, it should be read carefully in order to avoid any problems.

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are indicated by the "△" mark on the schematic diagram and the replacement parts list. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire, or other hazards.

Do not modify the original design without permission of manufacture.

Pan / Tilt

Panning Ratio :	Endless
Panning Angle Setting :	Possible (at Auto-Pan mode)
Panning mode :	Manual/Auto Pan
Panning Speed :	Manual : Approx. 3°/sec., 24°/sec eight steps
Tilting Ratio :	0 - 90°
Tilting Speed :	Manual : Approx. 1.5°/sec, 12°/sec. eight steps

Weights and dimensions indicated are approximate.
Specifications are subject to change without notice.

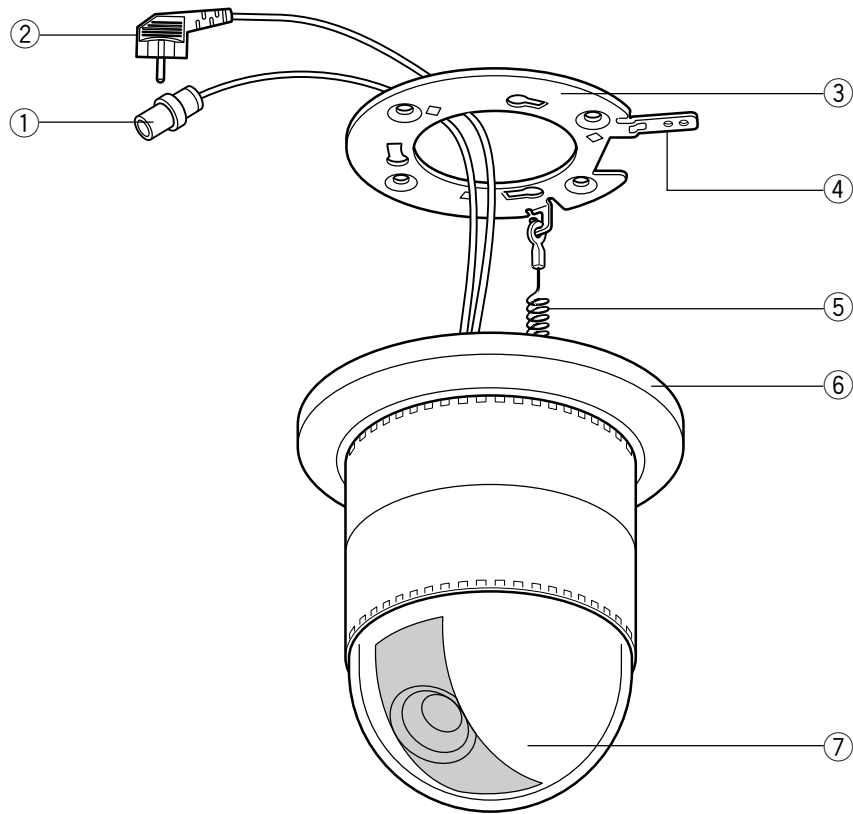
OPTIONAL ACCESSORY

Dome Cover	WV-CS1S
Ceiling Mount Bracket	WV-Q105E/WV-Q106E/WV-Q107E
Wall Mount Bracket	WV-Q108E

CONTENTS

Major operating Controls and Their Functions	1
Installation	2
Connection	4
System Connection	5
Circuit Description	
IC Description	6
About Your Computer	27
Adjustment Procedure	28
Location of Test Points and Adjusting Controls	46
Appearance of ICs, Transistors and Diodes	47
Chip Components	48
Wiring Diagram	49
Block Diagram	
Servo Board.....	50
Digital Board	51
Drive Board.....	52
Schematic Diagram	
Drive Board.....	54
Digital Board	55
Servo Board/Tilt Limit Board.....	58
Power Board	59
Sensor Board.....	61
Conductor View	
Drive Board.....	53
Digital Board	56
Servo Board/Tilt Limit Board.....	57
Power Board	60
Sensor Board.....	61
Exploded View	62
Replacement Parts List	63

MAJOR OPERATING CONTROLS AND THEIR FUNCTIONS



(1) Video Output Connector

(2) Power Cable

(3) Camera Mounting Angle

(4) Pan/Tilt Starting Point

(5) Fall Prevention Wire

(6) Decoration Cover

(7) Dome Cover

INSTALLATION

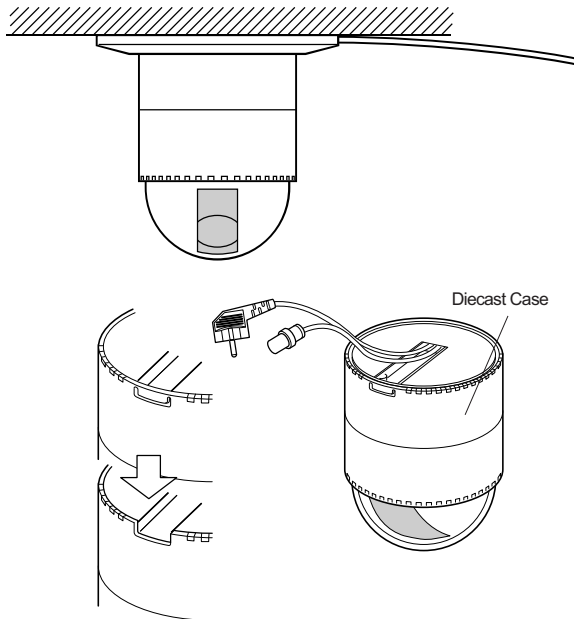
Precautions :

1. The following all installations should be made by qualified service personnel or system installers and should confirm to all local codes.
2. Be sure to use the ceiling board having the enough strength to support this camera.
3. Do use the optional Ceiling Mount Bracket WV-Q105E, WV-Q106E or WV-Q107E and the Wall Mount Bracket WV-Q108E in accordance with your neccessary.

1. Direct Mounting of Combination Camera onto the Ceiling

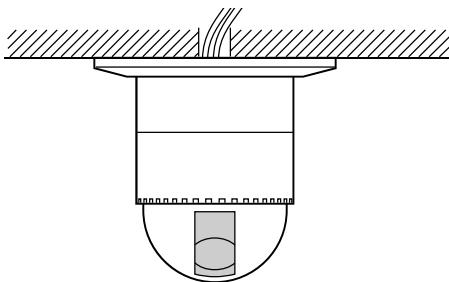
a. The cable come from the side

Cut the diecast case and decoration cover as shown in the following.



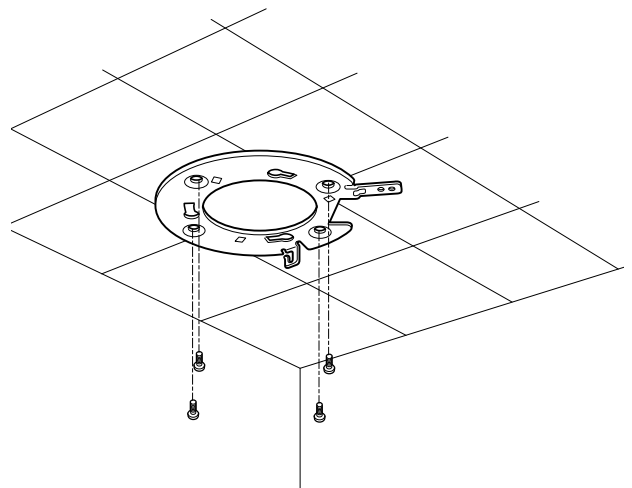
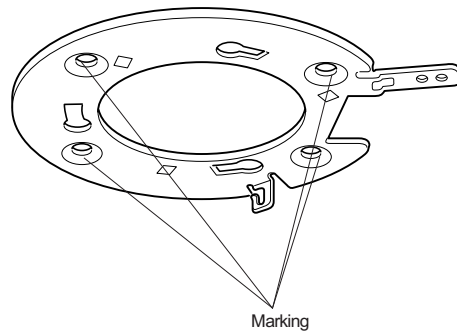
Note: Be sure to protect the video and power cables. Otherwise, the cutting surface will give the damage to the cables.

b. The cables go through into the ceiling nothing to do.



1-1.Remove the Mounting Screw (M3) from the Camera Mounting Angle (provided).

1-2. Mark the mounting holes into the ceiling by using the removed Camera Mounting Angle as a template.

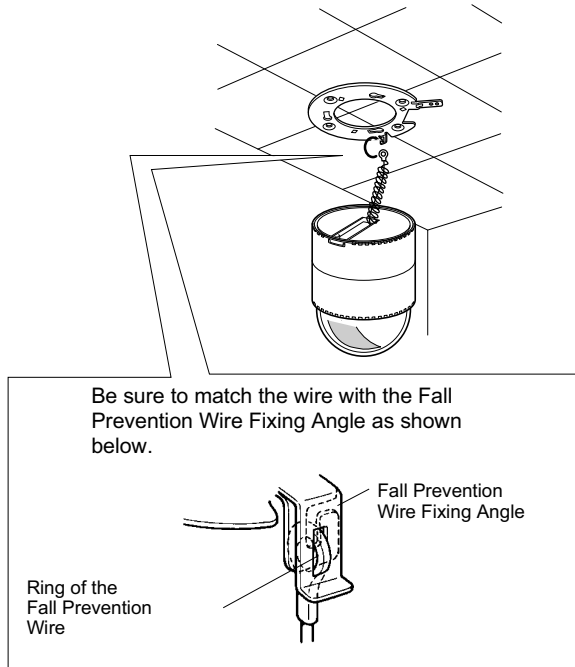


1-3. Fix the Camera Mounting Angle onto the ceiling by using four camera mounting angle fixing screws (not provided).

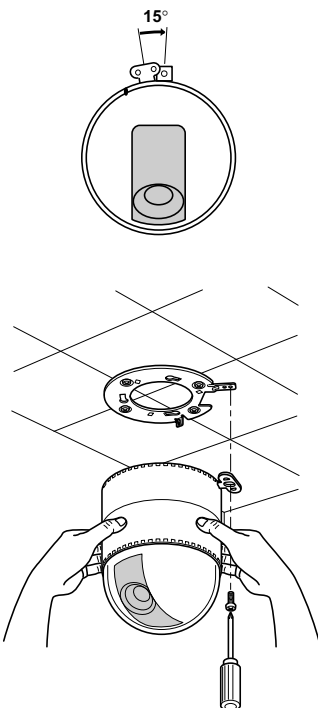
Caution:

Install to support the load of 4 times the total weight.

1-4. Hang the Fall Prevention Wire to the Camera Mounting Angle.



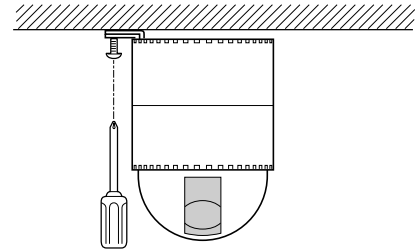
1-5. Insert the camera into the Camera Mounting Angle and rotate the camera clockwise.



1-6. Tighten the Mounting Screw (provided).

Notes :

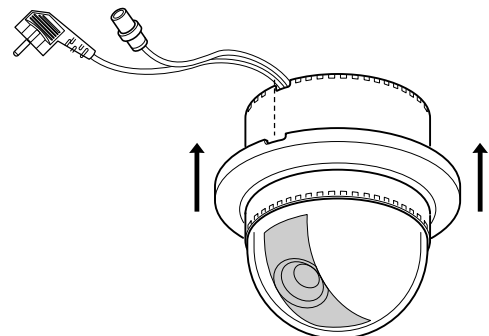
1. Tighten the Camera Fixing Screw with the screwdriver.
2. Do mount the camera and Camera Mounting Angle completely as shown in the following.
3. When removing the camera from the Camera Mounting Angle, loosen and press up the Camera



1-7. Fix the Decoration Cover to the Camera Mounting Angle.

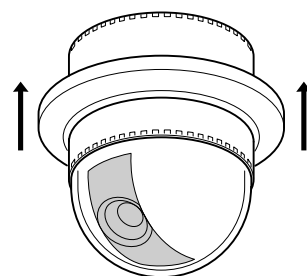
a. In case of coming the cable from the side.

Pass the cables into the pre-made hole (refer to item 1-a in INSTALLATION) on the Decoration Cover.



b. In case of going the cable through into the ceiling.

Push up the Decoration Cover to the Camera Mounting Angle.

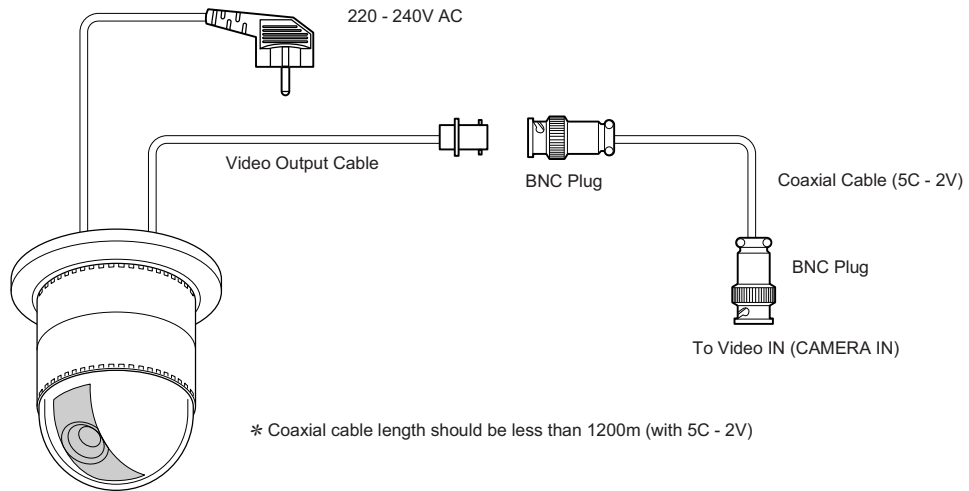


When using the optional bracket for the installation, refer to the Operating Instructions of WV-Q105E, WV-Q106E, WV-Q107E or WV-Q108E for detail.

CONNECTIONS

Precaution:

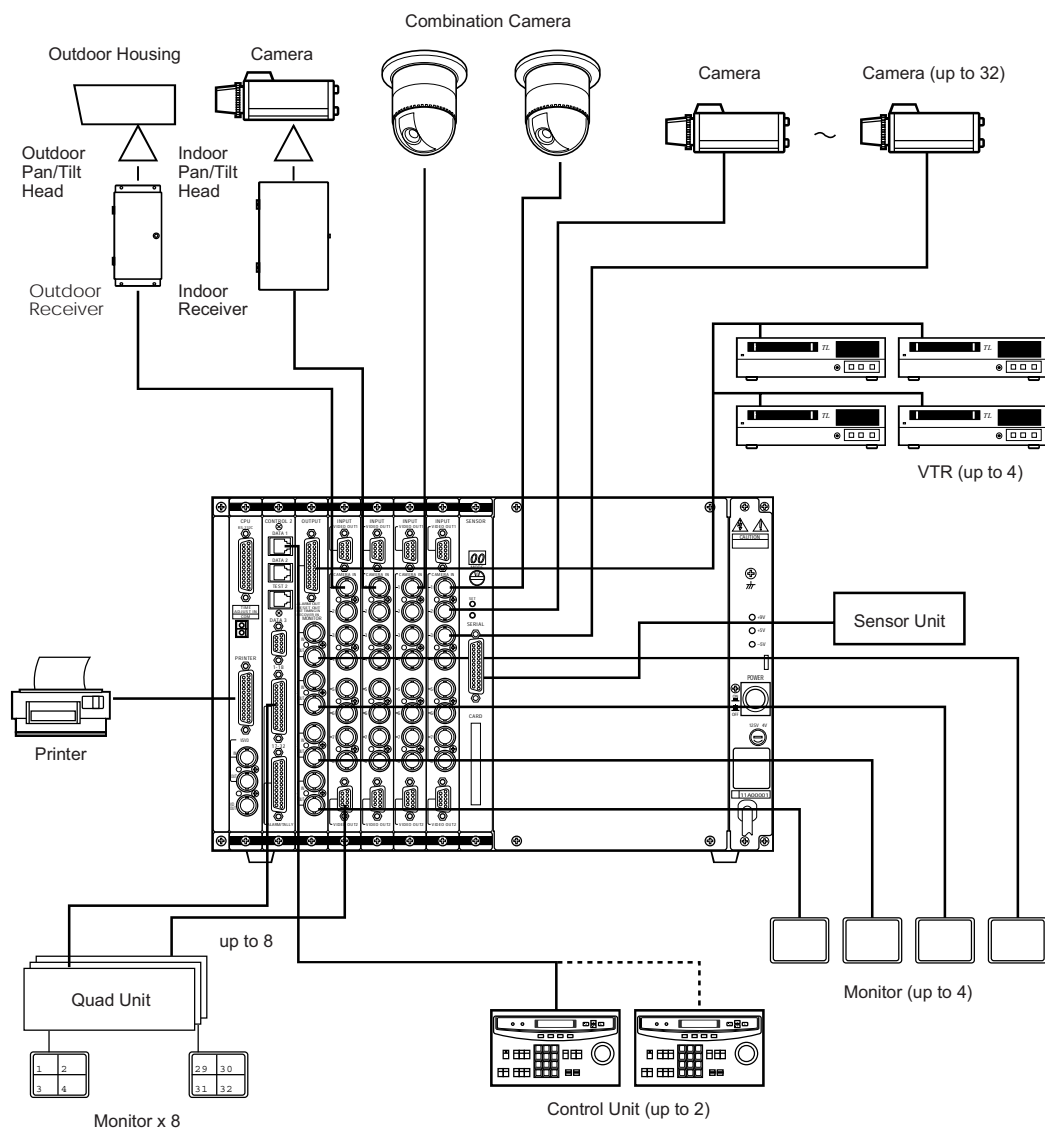
The following connections should be made by qualified service personnel or system installers.



Notes:

- The self-check operation (The zooming and focusing are operated once) is done after turning on the power.
- When the AUTO PAN ON mode has been selected, panning will start automatically.

SYSTEM CONNECTION

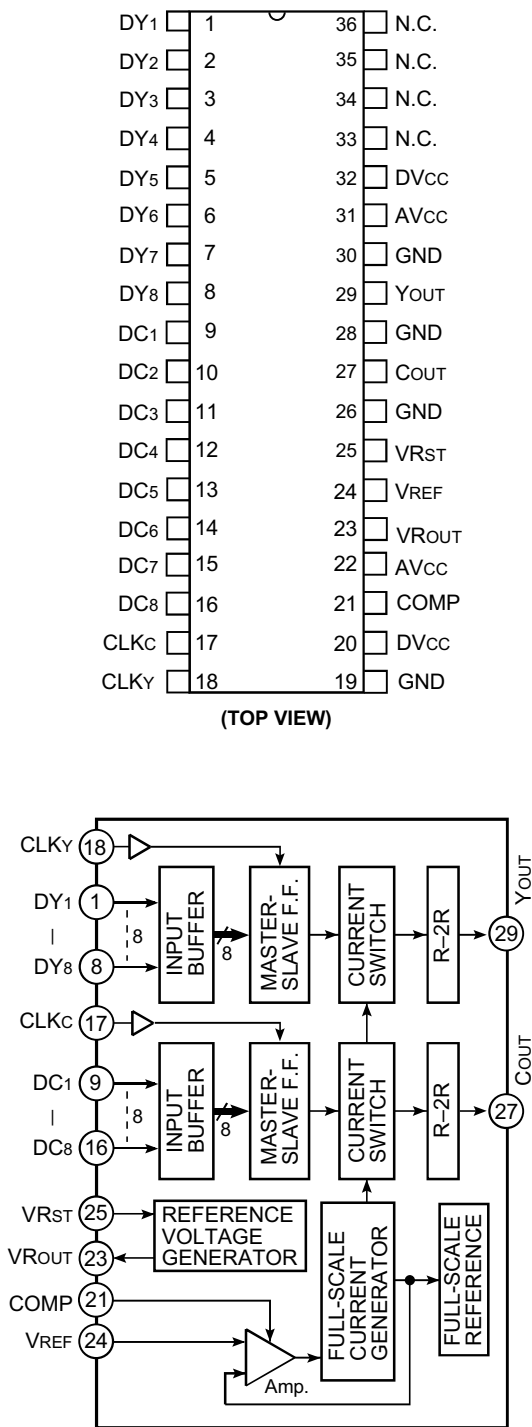


CIRCUIT DESCRIPTION

IC Description

1. Digital Board

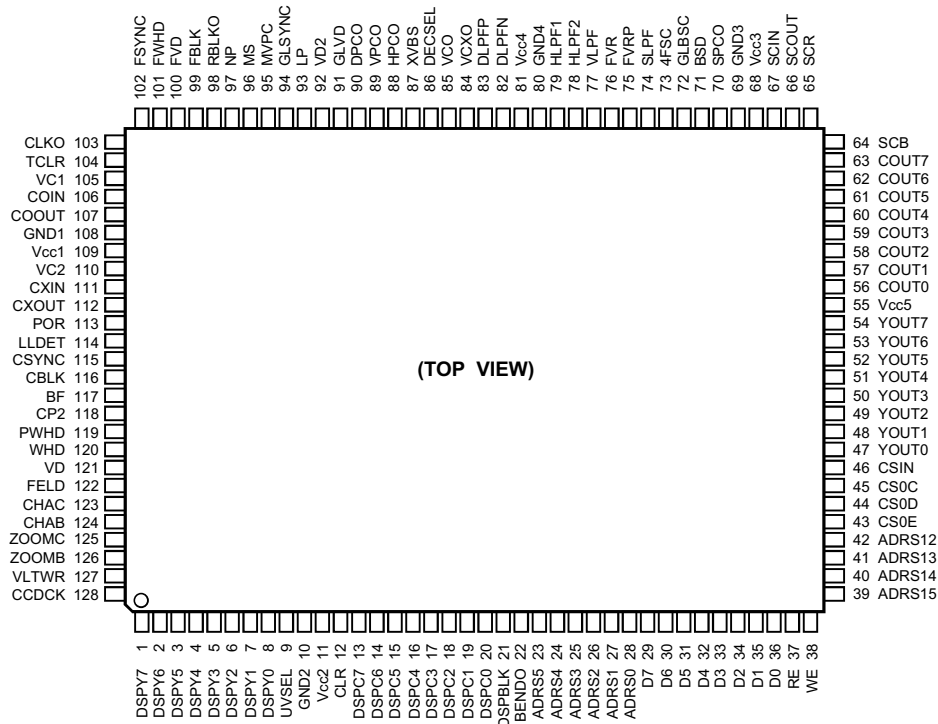
1.1. IC11 on the Digital Board is using the 2-Channel 8-Bit D/A Converter IC YWUPC664GS.
Description of this IC is as follows:



Pin	Name	I/O	Description
1	DY1	I	Luminance Data input terminal. (8-Bit)
2	DY2	I	
3	DY3	I	
4	DY4	I	
5	DY5	I	
6	DY6	I	
7	DY7	I	
8	DY8	I	
9	DC1	I	Chrominance Data input terminal. (8-Bit)
10	DC2	I	
11	DC3	I	
12	DC4	I	
13	DC5	I	
14	DC6	I	
15	DC7	I	
16	DC8	I	
17	CLKc	I	C Clock Pulse input terminal.
18	CLKY	I	Y Clock Pulse input terminal.
19	GND	-	Ground terminal.
20	DVcc	-	Power Supply terminal for Digital Circuit.
21	COMP	I	Phase Compensation input terminal.
22	AVcc	-	Power supply terminal for Analog Circuit.
23	VRout	O	Reference Voltage output terminal.
24	VREF	I	Reference Voltage input terminal.
25	VRst	I	Reference Voltage adjustment terminal.
26	GND	-	Ground terminal.
27	CoUT	O	Chrominance signal output terminal.
28	GND	-	Ground terminal.
29	Yout	O	Luminance signal output terminal.
30	GND	-	Ground terminal.
31	AVcc	-	Power supply terminal for Analog Circuit.
32	DVcc	-	Power supply terminal for Digital Circuit.
33	N.C.	-	Non Connection.
34	N.C.	-	Non Connection.
35	N.C.	-	Non Connection.
36	N.C.	-	Non Connection.

1.2. IC9 on the Digital Board is using the Digital Encoder IC YWCF45811PGJ.

Description of this IC is as follows:



Pin	Name	I/O	Description
1	DSPY7	I	Luminance Data input terminals. (8-Bit)
2	DSPY6	I	
3	DSPY5	I	
4	DSPY4	I	
5	DSPY3	I	
6	DSPY2	I	
7	DSPY1	I	
8	DSPY0	I	
9	UVSEL	I	UV Selection signal input terminal.
10	GND2	–	Ground terminal.
11	Vcc2	–	Power supply terminal.
12	CLR	I	Clear Pulse input terminal.
13	DSPC7	I	Chrominance Data input terminals. (8-Bit)
14	DSPC6	I	
15	DSPC5	I	
16	DSPC4	I	
17	DSPC3	I	
18	DSPC2	I	
19	DSPC1	I	
20	DSPC0	I	
21	DSPBLK	I	Blanking Pulse input terminal for Digital circuit.

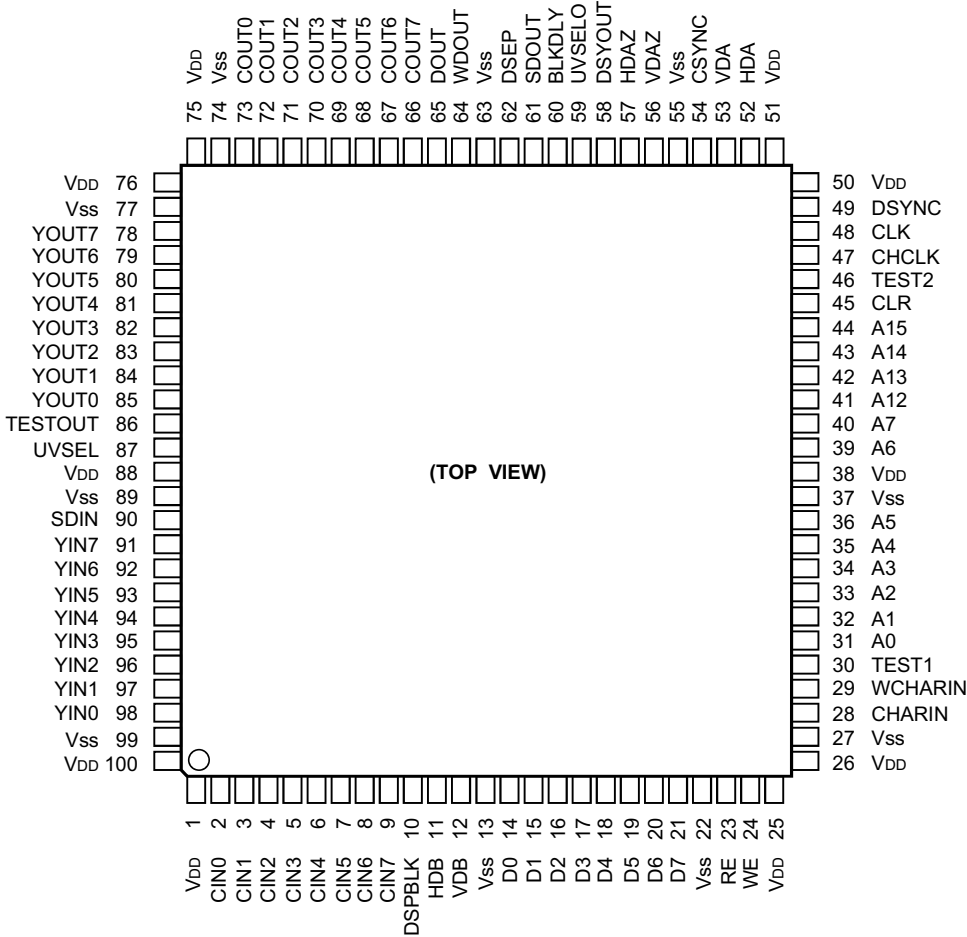
Pin	Name	I/O	Description
22	BENDO	O	Border End Pulse output terminal.
23	ADRS5	I	Address signal input terminals.
24	ADRS4	I	
25	ADRS3	I	
26	ADRS2	I	
27	ADRS1	I	
28	ADRS0	I	
29	D7	I/O	Data input/output terminals. (8-Bit)
30	D6	I/O	
31	D5	I/O	
32	D4	I/O	
33	D3	I/O	
34	D2	I/O	
35	D1	I/O	
36	D0	I/O	
37	RE	I	Read Enable signal input terminal.
38	WE	I	Write Enable signal input terminal.
39	ADRS15	I	Address signal input terminals.
40	ADRS14	I	
41	ADRS13	I	
42	ADRS12	I	

Pin	Name	I/O	Description
43	CS0E	O	Chip Select signal output terminal.
44	CS0D	O	Chip Select signal output terminal.
45	CS0C	O	Chip Select signal output terminal.
46	CSIN	I	Chip Select signal input terminal.
47	YOUT0	O	Luminance Data output terminals. (8-Bit)
48	YOUT1	O	
49	YOUT2	O	
50	YOUT3	O	
51	YOUT4	O	
52	YOUT5	O	
53	YOUT6	O	
54	YOUT7	O	
55	Vcc5	–	Power supply terminal.
56	COUT0	O	Chrominance Data output terminals. (8-Bit)
57	COUT1	O	
58	COUT2	O	
59	COUT3	O	
60	COUT4	O	
61	COUT5	O	
62	COUT6	O	
63	COUT7	O	
64	SCB	I/O	Bch SC signal input/output terminal.
65	SCR	I/O	Rch SC signal input/output terminal.
66	SCOUT	O	SC signal output terminal.
67	SCIN	I	SC signal input terminal.
68	Vcc3	–	Power supply terminal.
69	GND3	–	Ground terminal.
70	SPCO	O	Phase Comparator output terminal.
71	BSD	I	Burst Detect signal input terminal.
72	GLBSC	I	G/L Burst signal input terminal.
73	4FSC	O	4FSC Clock Pulse output terminal.
74	SLPF	I	SLPF signal input terminal.
75	FVRP	I	FVRP signal input terminal.
76	FVR	I	FVR signal input terminal.
77	VLPF	I	VLPF signal input terminal.
78	HLPF2	I	HLPF2 signal input terminal.
79	HLPF1	I	HLPF1 signal input terminal.
80	GND4	–	Ground terminal.
81	Vcc4	–	Power supply terminal.
82	DLPFN	I	DLPFN signal input terminal.
83	DLPFP	I	DLPFP signal input terminal.
84	VCXO	O	VCXO signal output terminal.
85	VCO	O	VCO signal input terminal.
86	DECSEL	I	DECSEL signal input terminal.
87	XVBS	O	XVBS signal output terminal.
88	HPCO	O	Horizontal Phase Comparator output terminal.

Pin	Name	I/O	Description
89	VPCO	O	Vertical Phase Comparator output terminal.
90	DPCO	O	Phase Comparator output terminal.
91	GLVD	I	G/L VD signal input terminal.
92	VD2	I	VD2 signal input terminal.
93	LP	I	LP signal input terminal.
94	GLSYNC	I	G/L Sync signal input terminal.
95	MVPC	I	MVPC signal input terminal.
96	MS	I	MS signal input terminal.
97	NP	I	NTSC/PAL Selection signal input terminal.
98	RBLKO	I/O	Blanking Pulse input/output terminal.
99	FBLK	O	Blanking Pulse output terminal.
100	FVD	O	FVD signal input terminal.
101	FWHD	O	FWHD signal output terminal.
102	FSYNC	O	FSYNC signal output terminal.
103	CLKO	O	Clock Pulse output terminal.
104	TCLR	I	TCLR signal input terminal.
105	VC1	O	VC1 signal output terminal.
106	COIN	I	Phase Comparator input terminal.
107	COOUT	O	Phase Comparator output terminal.
108	GND1	–	Ground terminal.
109	Vcc1	–	Power supply terminal.
110	VC2	O	VC2 signal output terminal.
111	CXIN	I	Phase Comparator input terminal.
112	CXOUT	O	Phase Comparator output terminal.
113	POR	I	POR signal input terminal.
114	LLDET	I	Line Lock Detect signal input terminal.
115	CSYNC	O	Composite Sync signal output terminal.
116	CBLK	O	Composite Blanking Pulse output terminal.
117	BF	I/O	Burst Flag signal input/output terminal.
118	CP2	O	Clamp Pulse output terminal.
119	PWHD	I	PWHD signal input terminal.
120	WHD	I/O	WHD signal input/output terminal.
121	VD	O	VD signal output terminal.
122	FELD	I/O	FELD signal input/output terminal.
123	CHAC	I	Character signal input terminal.
124	CHAB	I	Character signal input terminal.
125	ZOOMC	I	ZOOMC signal input terminal.
126	ZOOMB	I	ZOOMB signal input terminal.
127	VLTWR	I	VLTWR signal input terminal.
128	CCDCK	I	CCDCK signal input terminal.

1.3. IC17 on the Digital Board is using the Gate Array Logic IC YWL7A1219.

Description of this IC is as follows:



Pin	Name	I/O	Description
1	VDD	–	Power supply terminal.
2	CIN0	I	Chrominance Data input terminals. (8-Bit)
3	CIN1	I	
4	CIN2	I	
5	CIN3	I	
6	CIN4	I	
7	CIN5	I	
8	CIN6	I	
9	CIN7	I	
10	DSPBLK	I	Digital Blanking Pulse input terminal.
11	HDB	I	HD signal input terminal.
12	VDB	I	VD signal input terminal.
13	Vss	–	Ground terminal.
14	D0	O	Data output terminals. (8-Bit)
15	D1	O	

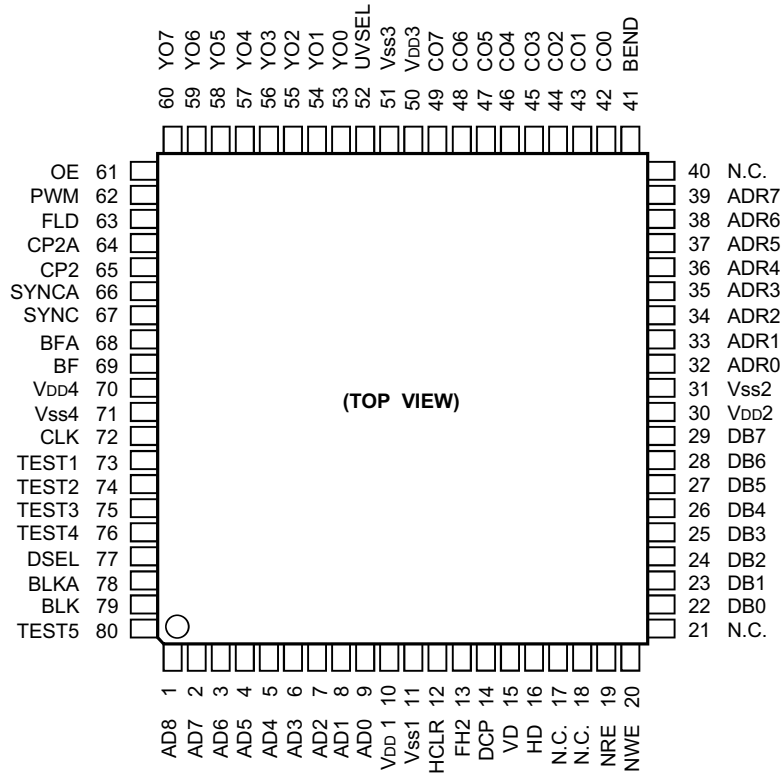
Pin	Name	I/O	Description
16	D2	O	Data output terminals. (8-Bit)
17	D3	O	
18	D4	O	
19	D5	O	
20	D6	O	
21	D7	O	
22	Vss	–	Ground terminal.
23	RE	I	Read Enable signal input terminal.
24	WE	I	Write Enable signal input terminal.
25	VDD	–	Power supply terminal.
26	VDD	–	Power supply terminal.
27	Vss	–	Ground terminal.
28	CHARIN	I	Character signal input terminal.
29	WCHARIN	I	Character signal input terminal.
30	TEST1	I	Test terminal.

Pin	Name	I/O	Description
31	A0	I	Address signal input terminals.
32	A1	I	
33	A2	I	
34	A3	I	
35	A4	I	
36	A5	I	
37	Vss	–	Ground terminal.
38	VDD	–	Power supply terminal.
39	A6	I	Address signal input terminals.
40	A7	I	
41	A12	I	
42	A13	I	
43	A14	I	
44	A15	I	
45	CLR	I	Clear signal input terminal.
46	TEST2	I	Test terminal.
47	CHCLK	I	Clock Pulse input terminal.
48	CLK	I	Clock Pulse input terminal.
49	DSYNC	I	D-Sync signal input terminal.
50	VDD	–	Power supply terminal.
51	VDD	–	Power supply terminal.
52	HDA	I	HD signal input terminal.
53	VDA	I	VD signal input terminal.
54	CSYNC	I	Composite Sync signal input terminal.
55	Vss	–	Ground terminal.
56	VDAZ	O	VD signal output terminal.
57	HDAZ	O	HD signal output terminal.
58	DSYOUT	O	D-Sync signal output terminal.
59	UVSELO	O	UV Selection signal output terminal.
60	BLKDLY	O	Blanking Pulse output terminal.
61	SDOUT	O	SD signal output terminal.
62	DSEP	O	DSEP signal output terminal.
63	Vss	–	Ground terminal.
64	WDOUT	O	Character signal output terminal.
65	DOUT	O	Character signal output terminal.
66	COUT7	O	Chrominance Data output terminals. (8-Bit)
67	COUT6	O	
68	COUT5	O	
69	COUT4	O	
70	COUT3	O	
71	COUT2	O	
72	COUT1	O	
73	COUT0	O	
74	Vss	–	Ground terminal.
75	VDD	–	Power supply terminal.
76	VDD	–	Power supply terminal.

Pin	Name	I/O	Description
77	Vss	–	Ground terminal.
78	YOUT7	O	Luminance Data output terminals. (8-Bit)
79	YOUT6	O	
80	YOUT5	O	
81	YOUT4	O	
82	YOUT3	O	
83	YOUT2	O	
84	YOUT1	O	
85	YOUT0	O	
86	TESTOUT	O	Test terminal.
87	UVSEL	I	UV Selection signal input terminal.
88	VDD	–	Power supply terminal.
89	Vss	–	Ground terminal.
90	SDIN	I	SD signal input terminal.
91	YIN7	I	Luminance Data input terminals. (8-Bit)
92	YIN6	I	
93	YIN5	I	
94	YIN4	I	
95	YIN3	I	
96	YIN2	I	
97	YIN1	I	
98	YIN0	I	
99	Vss	–	Ground terminal.
100	VDD	–	Power supply terminal.

1.4. IC3 on the Digital Board is using the Y/C Digital Signal Processor IC MN673211M2U.

Description of this IC is as follows:



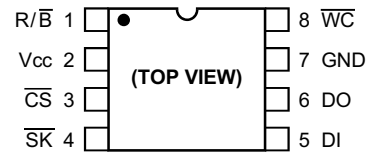
Pin	Name	I/O	Description
1	AD8	I	Video Signal Data input terminals from A/D Converters. (8-Bit)
2	AD7	I	
3	AD6	I	
4	AD5	I	
5	AD4	I	
6	AD3	I	
7	AD2	I	
8	AD1	I	
9	AD0	I	
10	Vdd1	–	Power supply terminal.
11	Vss1	–	Ground terminal.
12	HCLR	I	HCLR Pulse input terminal.
13	FH2	I	FH2 signal input terminal.
14	DCP	I	Clamp Pulse input terminal for Digital circuit.
15	VD	I	Vertical Drive Pulse input terminal.
16	HD	I	Horizontal Drive Pulse input terminal.
17	N.C.	–	Non connection.
18	N.C.	–	Non connection.
19	NRE	I	Read Enable signal input terminal.

20	NWE	I	Write Enable signal input terminal.
21	N.C.	–	Non connection.
22	DB0	I/O	Data Bus terminals between Microprocessor. (8-Bit)
23	DB1	I/O	
24	DB2	I/O	
25	DB3	I/O	
26	DB4	I/O	
27	DB5	I/O	
28	DB6	I/O	
29	DB7	I/O	
30	Vdd2	–	Power supply terminal.
31	Vss2	–	Ground terminal.
32	ADR0	I	Address signal input terminals from Microprocessor. (8-Bit)
33	ADR1	I	
34	ADR2	I	
35	ADR3	I	
36	ADR4	I	
37	ADR5	I	
38	ADR6	I	
39	ADR7	I	

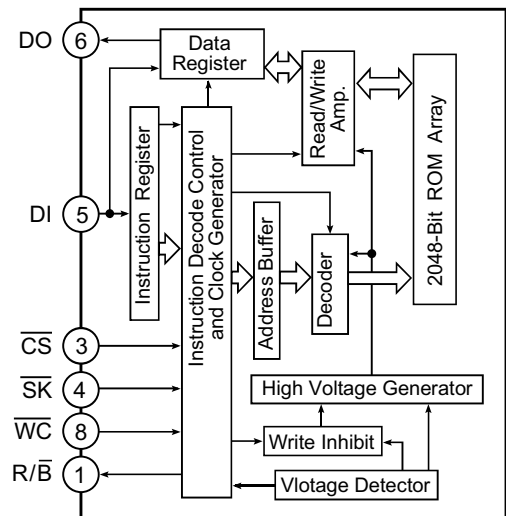
Pin	Name	I/O	Description
40	N.C.	–	Non connection.
41	BEND	O	Block Average Data Interrupt signal output terminal.
42	CO0	O	Chroma Signal Data output terminals. (8-Bit)
43	CO1	O	
44	CO2	O	
45	CO3	O	
46	CO4	O	
47	CO5	O	
48	CO6	O	
49	CO7	O	(MSB)
50	VDD3	–	Power supply terminal.
51	Vss3	–	Ground terminal.
52	UVSEL	O	U/V Signal Switching Pulse output terminal.
53	YO0	O	Luminance Signal Data output terminals. (8-Bit)
54	YO1	O	
55	YO2	O	
56	YO3	O	
57	YO4	O	
58	YO5	O	
59	YO6	O	
60	YO7	O	(MSB)
61	OE	I	Output Enable signal input terminal.
62	PWM	O	PWM signal output terminal for Lens Iris Control.
63	FLD	O	FLD signal output terminal.
64	CP2A	O	Clamp Pulse (CP2) output terminal.
65	CP2	I	Clamp Pulse (CP2) input terminal.
66	SYNCA	O	Composite Sync signal output terminal.
67	SYNC	I	Composite Sync signal input terminal.
68	BFA	O	Burst Flag Pulse output terminal for Encoder.
69	BF	I	Burst Flag Pulse input terminal.
70	VDD4	–	Power supply terminal.
71	Vss4	–	Ground terminal.
72	CLK	I	Clock Pulse input terminal.
73	TEST1	I	Test terminals. (Normally fixed at low.)
74	TEST2	I	
75	TEST3	I	
76	TEST4	I	
77	DSEL	I	1 Clock Delay selection signal input terminal.
78	BLKA	O	Blanking Pulse output terminal for Encoder.
79	BLK	O	Blanking Pulse input terminal.
80	TEST5	I	Test terminal. (Normally fixed at low.)

1.5. IC4 on the Digital Board is using the 2K EEPROM IC YWBR9020FE1.

Description of this IC is as follows:

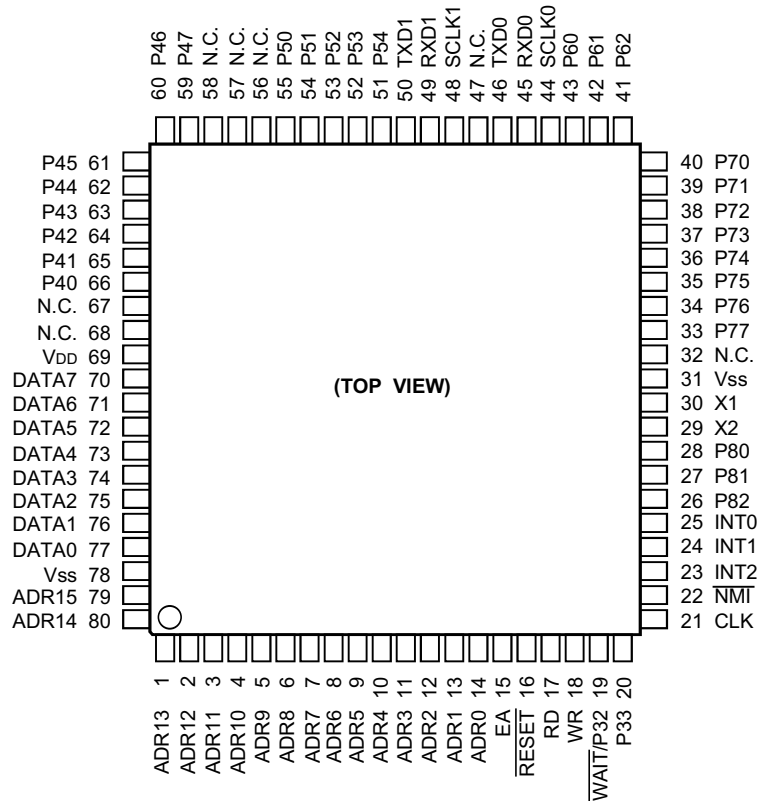


Pin	Name	I/O	Description
1	R/ $\overline{B}$	O	Ready/ $\overline{\text{Busy}}$ Status signal output terminal.
2	Vcc	–	Power supply terminal.
3	$\overline{\text{CS}}$	I	Chip Select signal input terminal.
4	$\overline{\text{SK}}$	I	Serial Data Clock Pulse input terminal.
5	DI	I	Serial Data input terminal.
6	DO	O	Serial Data output terminal.
7	GND	–	Ground terminal.
8	$\overline{\text{WC}}$	I	Write Control signal input terminal.



1.6. IC8 on the Digital Board is using the 8-Bit Microprocessor IC YWTMP90PK78A.

Description of this IC is as follows:



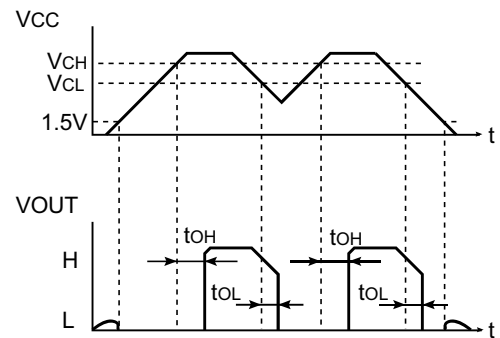
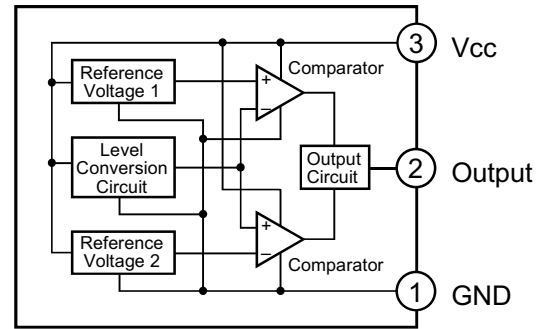
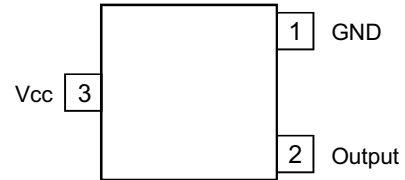
Pin	Name	I/O	Description
1	ADR13	O	Address signal output terminals.
2	ADR12	O	
3	ADR11	O	
4	ADR10	O	
5	ADR9	O	Not used.
6	ADR8	O	Not used.
7	ADR7	O	Address signal output terminals.
8	ADR6	O	
9	ADR5	O	
10	ADR4	O	
11	ADR3	O	
12	ADR2	O	
13	ADR1	O	
14	ADR0	O	
15	EA	I	EA signal input terminal.
16	RESET	I	Reset Pulse input terminal.
17	RD	O	Read Enable signal output terminal.
18	WR	O	Write Enable signal output terminal.
19	WAIT/P32	I	Not used.

Pin	Name	I/O	Description
20	P33	I	LL Detector signal input terminal.
21	CLK	O	Not used.
22	NMI	I	Non Maskable Interrupt signal input terminal.
23	INT2	I	Interrupt 2 signal input terminal.
24	INT1	I	BEND signal input terminal.
25	INT0	I	FVD signal input terminal.
26	P82	I	Not used.
27	P81	I	EPROM Busy signal input terminal.
28	P80	O	Motor Clock Pulse output terminal.
29	X2	O	Crystal Oscillator output terminal.
30	X1	I	Crystal Oscillator input terminal.
31	Vss	-	Ground terminal.
32	N.C.	-	Non connection.
33	P77	I/O	Not used.
34	P76	I/O	Not used.
35	P75	I/O	Not used.
36	P74	I/O	Not used.
37	P73	I/O	Not used.

Pin	Name	I/O	Description
38	P72	O	Lens CS signal output terminal.
39	P71	O	SCDA P-LD signal output terminal.
40	P70	I/O	Not used.
41	P62	O	TG Chip Select signal output terminal.
42	P61	O	D/A Load signal output terminal.
43	P60	O	EPROM Chip Select signal output terminal.
44	SCLK0	O	EPROM Serial Clock Pulse output terminal.
45	RXD0	I	EPROM Serial Data input terminal.
46	TXD0	O	EPROM Serial Data output terminal.
47	N.C.	–	Non connection.
48	SCLK1	O	Serial Data Clock Pulse output terminal.
49	RXD1	I	Serial Data input terminal.
50	TXD1	O	Serial Data output terminal.
51	P54	I	Test terminal.
52	P53	O	Strobe Pulse output terminal.
53	P52	O	EPROM Reset Pulse output terminal.
54	P51	I	NTSC/PAL signal input terminal.
55	P50	I	Field Pulse input terminal.
56	N.C.	–	Non connection.
57	N.C.	–	Non connection.
58	N.C.	–	Non connection.
59	P47	I/O	Not used.
60	P46	I/O	Not used.
61	P45	I/O	Not used.
62	P44	I/O	Not used.
63	P43	I	Pan Limit Left signal input terminal.
64	P42	I	Pan Limit Right signal input terminal.
65	P41	I	Tilt Limit Down signal input terminal.
66	P40	I	Tilt Limit Up signal input terminal.
67	N.C.	–	Non connection.
68	N.C.	–	Non connection.
69	VDD	–	Power supply terminal.
70	DATA7	I/O	Data input/output terminals. (8-Bit)
71	DATA6	I/O	
72	DATA5	I/O	
73	DATA4	I/O	
74	DATA3	I/O	
75	DATA2	I/O	
76	DATA1	I/O	
77	DATA0	I/O	
78	VSS	–	Ground terminal.
79	ADR15	O	Address signal output terminals.
80	ADR14	O	

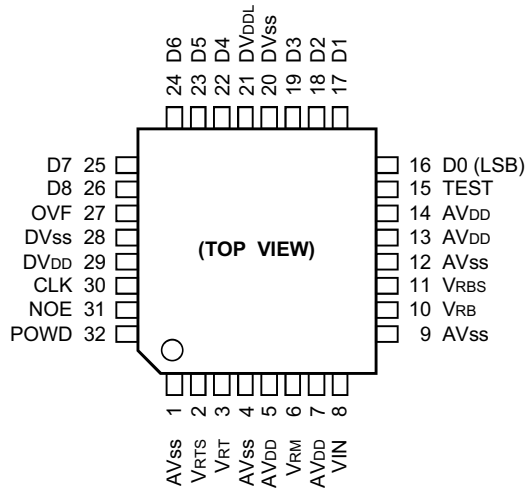
1.7. IC2 on the Digital Board is using the 3.5V Reset IC MN13821Y.

Description of this IC is as follows:



1.8. IC1 on the Digital Board is using the 9-Bit A/D Converter IC MN6576.

Description of this IC is as follows:

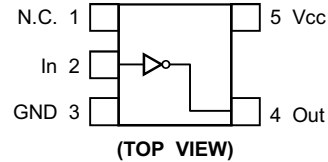


Pin	Name	I/O	Description
22	D4	O	Digital signal output terminals. (9-Bit) (MSB)
23	D5	O	
24	D6	O	
25	D7	O	
26	D8	O	
27	OVF	O	Overflow output terminal.
28	DVss	–	Ground terminal for Digital circuit.
29	DVDD	–	Power supply terminal for Digital circuit.
30	CLK	I	Sampling Clock Pulse input terminal.
31	NOE	I	Output Enable signal input terminal.
32	POWD	I	Power Down Mode switching terminal.

Pin	Name	I/O	Description
1	AVss	–	Ground terminal for Analog circuit.
2	VRTS	O	Top reference voltage output terminal.
3	VRT	I	Top reference voltage input terminal.
4	AVss	–	Ground terminal for Analog circuit.
5	AVDD	–	Power supply terminal for Analog circuit.
6	VRM	–	Center reference voltage terminal.
7	AVDD	–	Power supply terminal for Analog circuit.
8	VIN	I	Analog signal input terminal.
9	AVss	–	Ground terminal for Analog circuit.
10	VRB	I	Bottom reference voltage input terminal.
11	VRBS	O	Bottom reference voltage output terminal.
12	AVss	–	Ground terminal for Analog circuit.
13	AVDD	–	Power supply terminal for Analog circuit.
14	AVDD	–	Power supply terminal for Analog circuit.
15	TEST	I	Test Mode Switching terminal.
16	D0	O	(LSB)
17	D1	O	Digital signal output terminals. (9-Bit)
18	D2	O	
19	D3	O	
20	DVss	–	Ground terminal for Digital circuit.
21	DVDDL	I	Low voltage power supply terminal for Digital signal output circuit.

1.9. IC20 and 25 on the Digital Board is using the Single Inverter IC YWTC7SU04FUL.

Description of this IC is as follows:

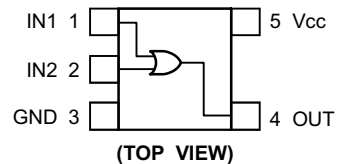


Truth Table

Input	Output
L	H
H	L

1.10. IC23 on the Digital Board is using the Single 2-Input OR Gate IC YWTC7S32F.

Description of this IC is as follows:

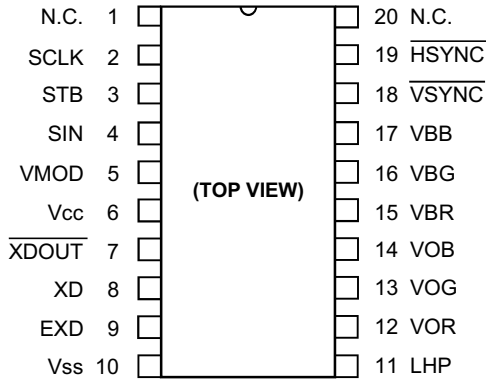


Truth Table

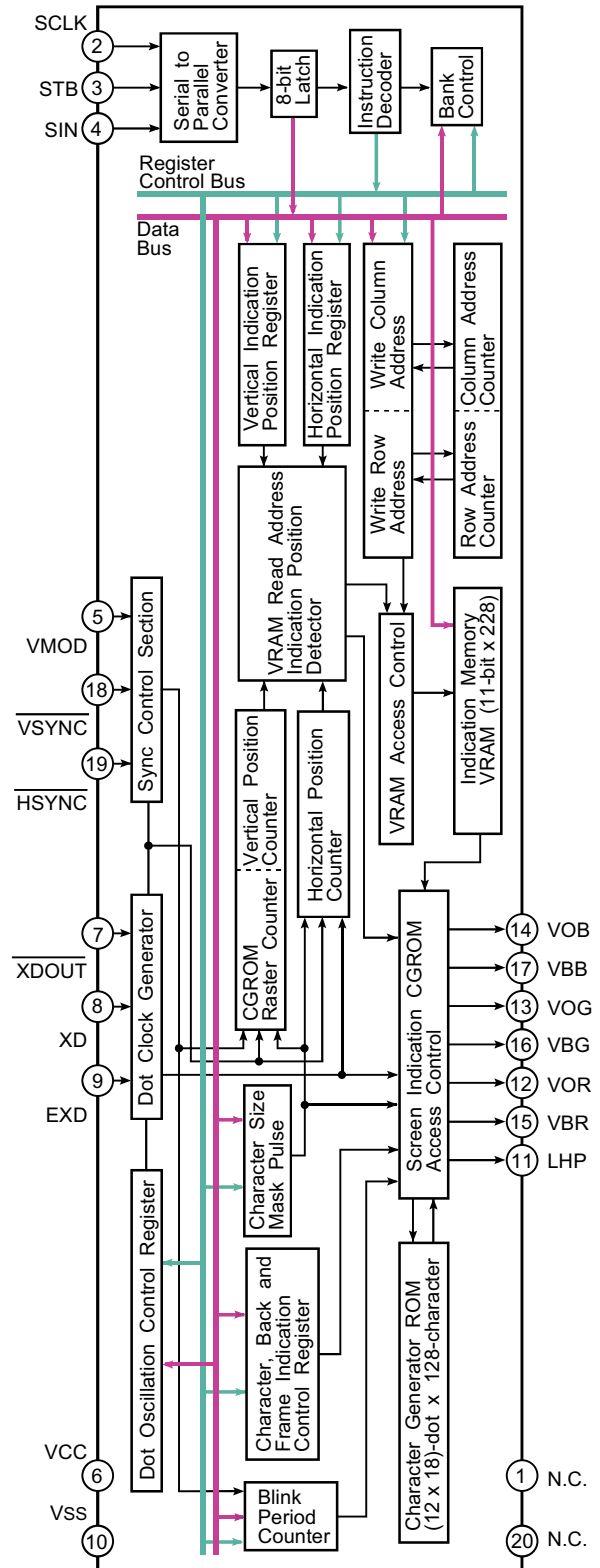
Inputs		Output
IN1	IN2	
L	L	L
H	L	H
L	H	H
H	H	H

1.11. IC18 on the Digital Board is using the Character Generator IC MB90077PF104.

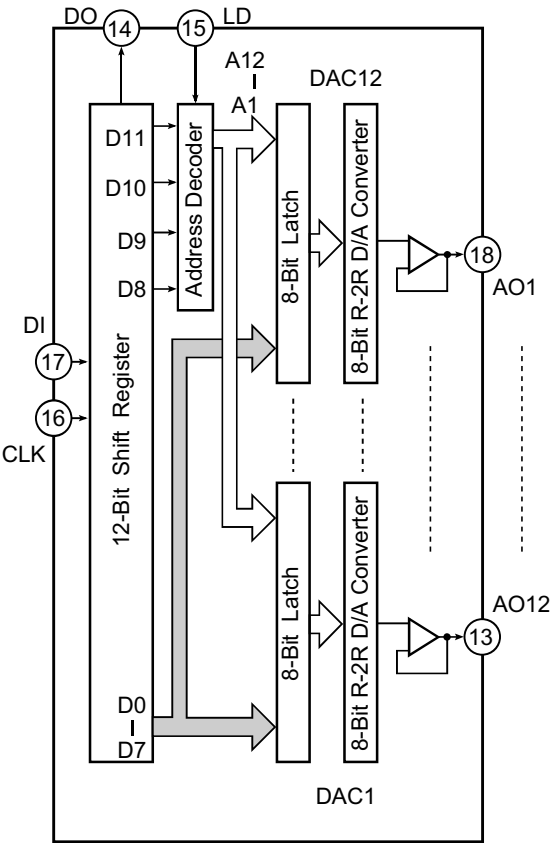
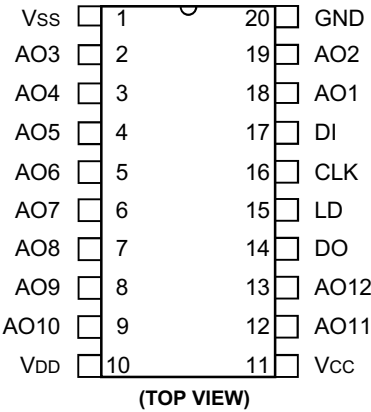
Description of this IC is as follows:



Pin	Name	I/O	Description
1	N.C.	–	Non Connection
2	SCLK	I	Serial Clock Pulse input terminal.
3	STB	I	Strobe Pulse input terminal. Serial Data should be read at rising edge of this signal.
4	SIN	I	Serial Data Input terminal for indication control.
5	VMOD	I	Effective edge changing input terminal for Vertical Sync Signal. "H" = Rising edge "L" = Falling edge
6	Vcc	–	Power supply terminal.
7	XDO $\overline{\text{UT}}$	O	XD Inverted signal output terminal.
8	XD	O	XD signal output terminal.
9	EXD	I	External signal input terminal.
10	Vss	–	Ground terminal.
11	LHP	O	Line Hider Pulse output terminal.
12	VOR	O	Colour signal output terminals of RGB system.
13	VOG	O	
14	VOB	O	
15	VBR	O	Blanking signal output terminals which indicating output of the character signal against the RGB system.
16	VBG	O	
17	VBB	O	
18	VS $\overline{\text{YNC}}$	I	Vertical Sync signal input terminal.
19	HS $\overline{\text{YNC}}$	I	Horizontal Sync signal input terminal.
20	N.C.	–	Non Connection



1.12. IC5 on the Digital Board and IC5 on the Control Board are using the 12-Channel D/A Converter IC YWMB88346BEF.
Description of this IC is as follows:

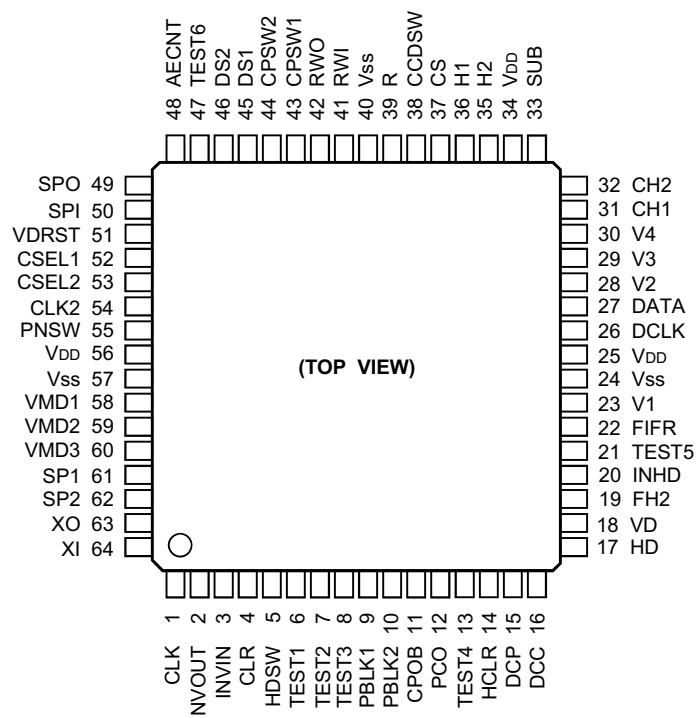


Pin	Name	I/O	Description
1	Vss	–	Ground terminal for D/A Converter circuit.
2	AO3	O	Analog Data 3 output terminal.
3	AO4	O	Analog Data 4 output terminal.
4	AO5	O	Analog Data 5 output terminal.
5	AO6	O	Analog Data 6 output terminal.
6	AO7	O	Analog Data 7 output terminal.
7	AO8	O	Analog Data 8 output terminal.
8	AO9	O	Analog Data 9 output terminal.
9	AO10	O	Analog Data 10 output terminal.
10	VDD	–	Power supply terminal for D/A Converter circuit.
11	VCC	–	Power supply terminal for MCU Interface and Ope-Amp. circuits.
12	AO11	O	Analog Data 11 output terminal.
13	AO12	O	Analog Data 12 output terminal.
14	DO	O	MSB Data output terminal from 12-Bit Shift Register.
15	LD	I	Load signal input terminal. Data of 12-Bit Shift Register should be loaded to Decoder and D/A Output Registers when LD = H.
16	CLK	I	Shift Clock input terminal. Serial Data from DI terminal should be input to Decoder and 12-Bit Shift Register at falling edge of this signal.
17	DI	I	12-Bit Serial Data input terminal.
18	AO1	O	Analog Data 1 output terminal.
19	AO2	O	Analog Data 2 output terminal.
20	GND	–	Ground terminal.

2. Drive Board

2.1. IC4 on the Drive Board is using the CCD Drive Pulse Generator IC YWCXD2404R.

Description of this IC is as follows:



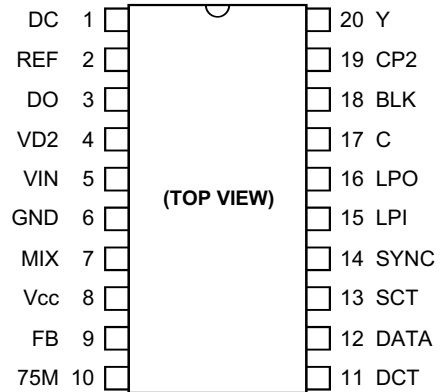
Pin	Name	I/O	Description
1	CLK	O	Clock (fck) Pulse output terminal.
2	INVOUT	O	Inverter output terminal.
3	INVIN	I	Inverter input terminal.
4	CLR	I	All clear signal input terminal. L: Clear; H: Active
5	HDSW	I	HD Switching signal input terminal. H: Internal; L: External
6	TEST1	I	Test terminal (normally open).
7	TEST2	I	Test terminal (normally open).
8	TEST3	I	Test terminal (normally open).
9	PBLK1	O	Pre Blanking Pulse output terminal. Start: Rising edge of HD signal.
10	PBLK2	O	Pre Blanking Pulse output terminal. Start: Rising edge of HCLR signal.
11	CPOB	O	OB Clamp Pulse output terminal.
12	PCO	O	Phase Comparator output terminal.
13	TEST4	I	Test terminal (normally open).
14	HCLR	O	H Clear pulse output.
15	DCP	O	Digital Clamp Pulse output.
16	DCC	O	Digital Clamp Pulse output terminal.

Pin	Name	I/O	Description
17	HD	I	HD signal input terminal.
18	VD	I	VD signal input terminal.
19	FH2	O	FH/2 Pulse output terminal.
20	INHD	O	Internal HD output terminal.
21	TEST5	I	Test terminal (normally open).
22	FIFR	I	Field accumulation:H Frame accumulation:L terminal.
23	V1	O	V1 Transfer Pulse output terminal.
24	Vss	–	Ground terminal.
25	VDD	–	Power supply terminal.
26	DCLK	I	Serial Clock input terminal.
27	DATA	I	Serial Data input terminal.
28	V2	O	V2 Transfer Pulse output terminal.
29	V3	O	V3 Transfer Pulse output terminal.
30	V4	O	V4 Transfer Pulse output terminal.
31	CH1	O	Charge Pulse for V1 output terminal.
32	CH2	O	Charge Pulse for V3 output terminal.
33	SUB	O	SUB signal output terminal.

Pin	Name	I/O	Description
34	VDD	–	Power supply terminal.
35	H2	O	H2 Transfer Pulse output terminal.
36	H1	O	H1 Transfer Pulse output terminal.
37	CS	I	Chip Select signal input terminal for serial Data.
38	CCDSW	I	CCD Element Select signal input terminal. (L: 510H; H: 768H)
39	R	O	R Transfer Pulse output terminal.
40	Vss	–	Ground terminal.
41	RWI	I	R Transfer Pulse Width adjust input terminal.
42	RWO	O	R Transfer Pulse Width adjust output terminal.
43	CPSW1	I	CPOB Phase Switching signal input terminals.
44	CPSW2	I	
45	DS1	O	Pulse output terminals for CDS.
46	DS2	O	
47	TEST6	I	Test terminal (nomally open).
48	AECNT	I	Electronic Shutter setting signal input terminal.
49	SPO	O	SP1, 2 Pulse phase adjust output terminal.
50	SPI	I	SP1, 2 Pulse phase adjust input terminal.
51	VDRST	I	VD Reset Pulse input terminal. (L: Reset; H: Normal)
52	CSEL1	I	CLK2 Pulse phase switching signal input terminals.
53	CSEL2	I	
54	CLK2	O	Clock Pulse output terminal for Digital circuit.
55	PNSW	I	TV System switching signal input terminal. (L: NTSC; H: PAL)
56	VDD	–	Power supply terminal.
57	Vss	–	Ground terminal.
58	VMD1	I	Electronic Shutter switching signal input terminals.
59	VMD2	I	
60	VMD3	I	
61	SP1	O	Sampling Pulse output terminals.
62	SP2	O	
63	XO	O	2fck OSC output terminal.
64	XI	I	2fck OSC input terminal.

2.2. IC8 on the Drive Board is using the Video Output IC YWC5020074E1.

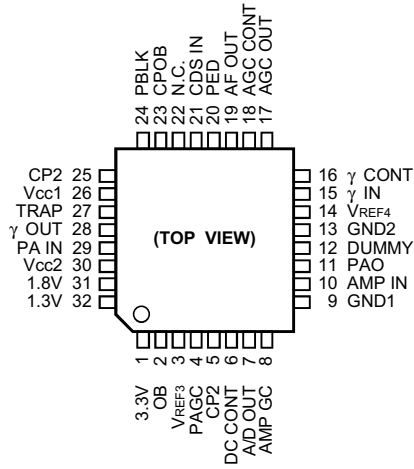
Description of this IC is as follows:



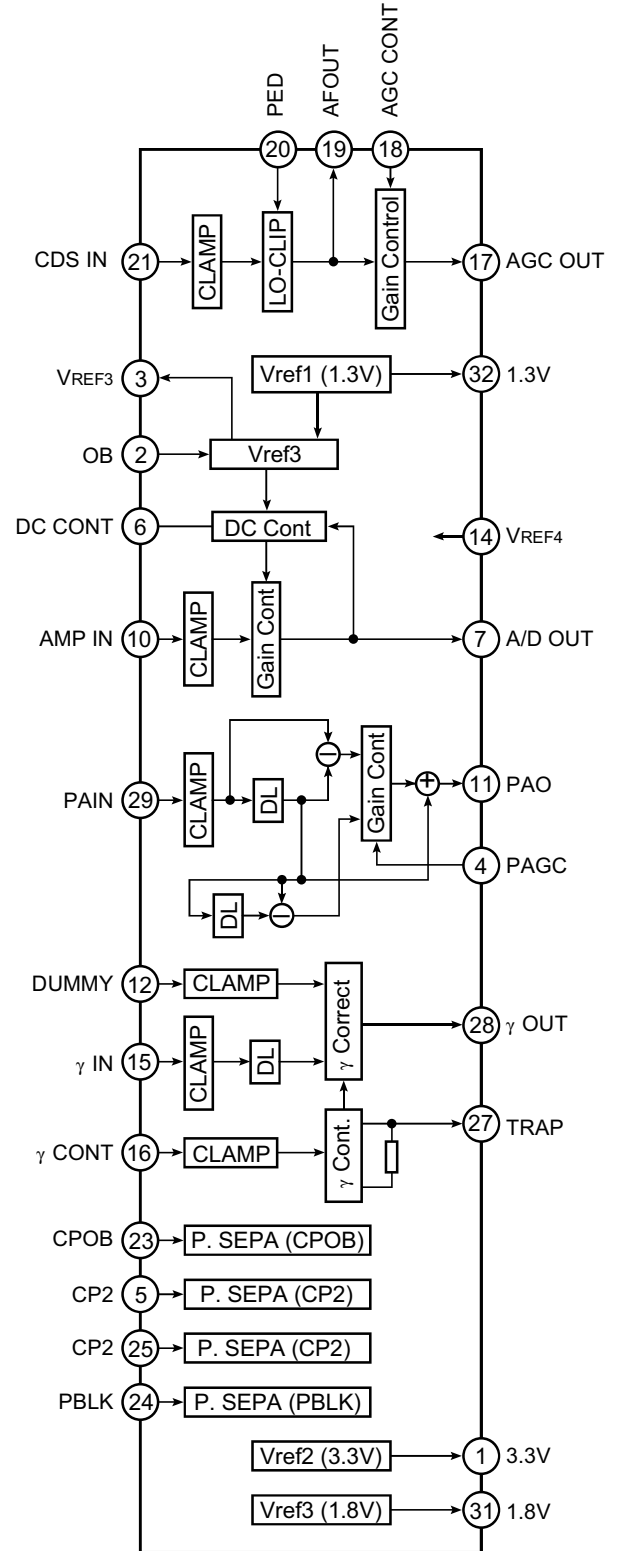
Pin	Name	I/O	Description
1	DC	I	DC signal input terminal.
2	REF	O	Reference voltage (2V) output terminal.
3	DO	O	Data output terminal.
4	VD2	O	VD2 signal output terminal.
5	VIN	I	Video signal input terminal.
6	GND	–	Ground terminal.
7	MIX	O	MIX signal output terminal.
8	Vcc	–	Power supply terminal.
9	FB	I	Feedback signal input terminal.
10	75M	O	Video signal output terminal.
11	DCT	I	DCT signal input terminal.
12	DATA	I	Data input terminal.
13	SCT	I	SCT signal input terminal.
14	SYNC	I	Sync signal input terminal.
15	LPI	I	Low Pass Filter input terminal.
16	LPO	O	Low Pass Filter output terminal.
17	C	I	Chroma signal input terminal.
18	BLK	I	Blanking Pulse input terminal.
19	CP2	I	Clamp Pulse input terminal.
20	Y	I	Luminance signal input terminal.

2.3. IC6 on the Drive Board is using the AGC IC AN2034FAP.

Description of this IC is as follows:

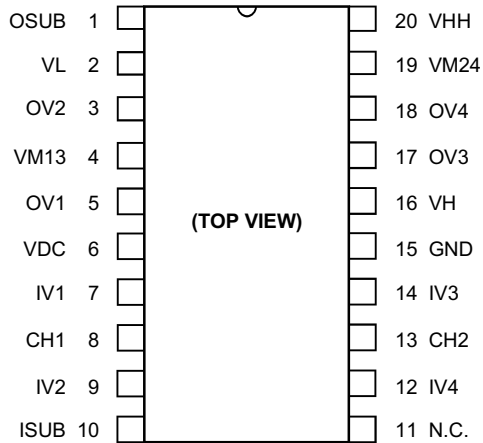


Pin	Name	I/O	Description
1	3.3V	O	Reference voltage (3.3V) output terminal.
2	OB	I	OB signal adjusting terminal.
3	VREF3	O	Reference voltage 3 input terminal.
4	PAGC	-	Pre Apature Gain control terminal.
5	CP2	I	Clamp Pulse input terminal.
6	DC CONT	O	DC control signal output terminal.
7	A/D OUT	O	A/D OUT signal output terminal.
8	AMP GC	I	Amplifier Gain control terminal.
9	GND1	-	Ground terminal.
10	AMP IN	I	Amplifier input terminal.
11	PAO	O	Pre Apature signal output terminal.
12	DUMMY	-	Dummy Clamp terminal.
13	GND2	-	Ground terminal.
14	VREF4	I	Reference voltage (1.8V) input terminal.
15	γ IN	I	γ signal input terminal.
16	γ CONT	I	γ control terminal.
17	AGC OUT	O	AGC signal output terminal.
18	AGC CONT	I	AGC control terminal.
19	AF OUT	O	AF signal output terminal.
20	PED	I	Pedestal Level adjusting terminal.
21	CDS IN	I	CDS-OUT signal input terminal.
22	N.C.	-	Non connection.
23	CPOB	I	CPOB signal input terminal.
24	PBLK	I	Pre Blanking Pulse input terminal.
25	CP2	I	Clamp Pulse input terminal.
26	Vcc1	-	Power supply terminal.
27	TRAP	O	TRAP signal output terminal.
28	γ OUT	O	γ signal output terminal.
29	PAIN	I	Pre Apature signal input terminal.
30	Vcc2	-	Power supply terminal.
31	1.8V	O	Reference voltage (1.8V) output terminal.
32	1.3V	O	Reference voltage (1.3V) output terminal.



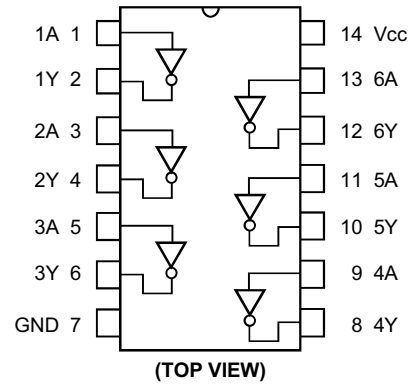
2.4. IC10 on the Drive Board is using the CCD V-Driver IC MN3112SA.

Description of this IC is as follows:



2.5. IC2 on the Drive Board is using the Hex Inverters IC YWTC74AT04F.

Description of this IC is as follows:



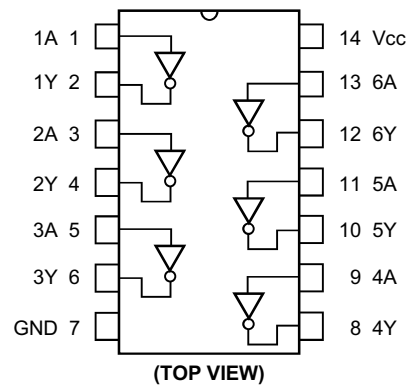
Truth Table

INPUT A	OUTPUT Y
L	H
H	L

Pin	Name	I/O	Description
1	OSUB	O	Vsub signal output terminal.
2	VL	–	VL voltage supply terminal.
3	OV2	O	Vertical Pulse 2 output terminal.
4	VM13	I	VM13 voltage supply terminal.
5	OV1	O	Vertical Pulse 1 output terminal.
6	VDC	–	Power supply.
7	IV1	I	Vertical Pulse 1 input terminal.
8	CH1	I	Horizontal Pulse 1 input terminal.
9	IV2	I	Vertical Pulse 2 input terminal.
10	ISUB	I	Vsub signal input terminal.
11	N.C.	–	Non Connection.
12	IV4	I	Vertical Pulse 4 input terminal.
13	CH2	I	Horizontal Pulse 2 input terminal.
14	IV3	I	Vertical Pulse 3 input terminal.
15	GND	–	Ground terminal.
16	VH	–	VH voltage supply terminal.
17	OV3	O	Vertical Pulse 3 output terminal.
18	OV4	O	Vertical Pulse 4 output terminal.
19	VM24	–	VM24 voltage supply terminal.
20	VHH	–	VHH voltage supply terminal.

2.6. IC13 on the Drive Board is using the Hex Inverters IC YWTC74VC04FS.

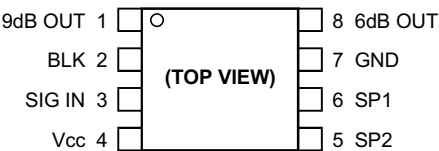
Description of this IC is as follows:



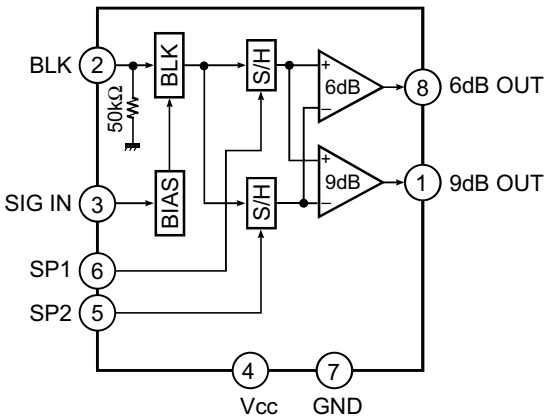
Truth Table

INPUT A	OUTPUT Y
L	H
H	L

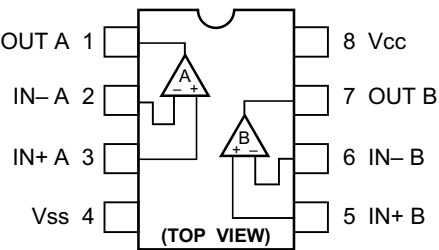
2.7. IC1 on the Drive Board is using the Correlated Double Sampling IC AN2018S.
Description of this IC is as follows:



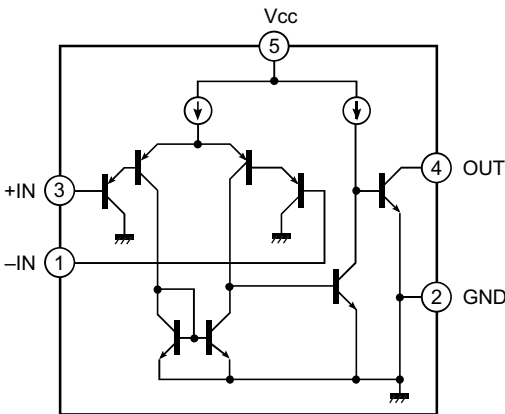
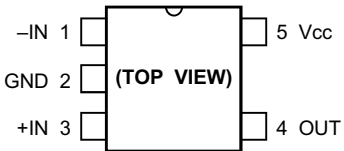
Pin	Name	I/O	Description
1	9dB OUT	O	CDS signal (9dB) output terminal.
2	BLK	I	Blanking Pulse input terminal.
3	SIG IN	I	CCD signal input terminal.
4	Vcc	–	Power supply terminal.
5	SP2	I	Sampling Pulse (2) input terminal.
6	SP1	I	Sampling Pulse (1) input terminal.
7	GND	–	Ground terminal.
8	6dB OUT	O	CDS signal (6dB) output terminal.



2.8. IC11 on the Drive Board is using the Dual Operational Amplifiers IC YWNJM3416.
Description of this IC is as follows:

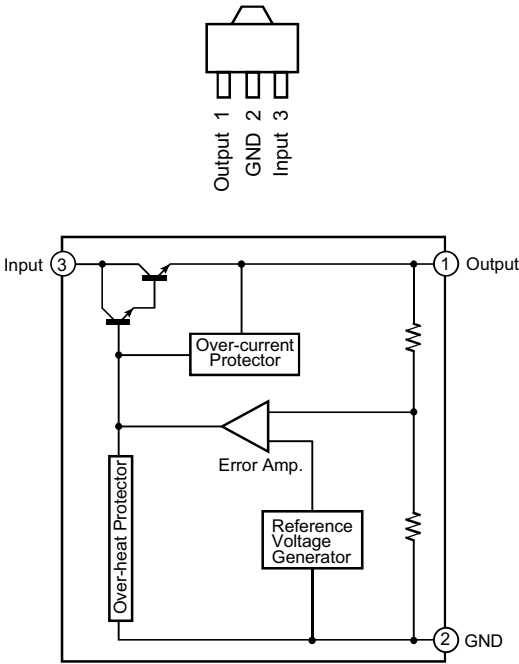


2.9. IC15 on the Drive Board is using the Single Comparator IC YWNJM2406F.
Description of this IC is as follows:

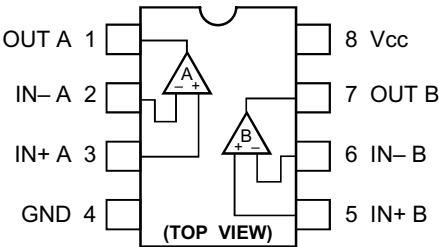


3. Servo Board

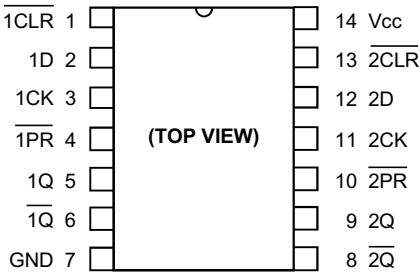
3.1. IC12 on the servo Board is using the 3-Terminal Voltage Regulator IC S81235PGT1.
Description of this IC is as follows:



3.2. IC9 on the Servo Board and IC1 to IC3 on the Tilt-Limit Board are using the Dual Operational Amplifiers IC YWNJM2904D.
Description of this IC is as follows:



3.3. IC3 on the Servo Board is using the Dual D-FFs with Preset and Clear IC YWT74VC74FSL.
Description of this IC is as follows:

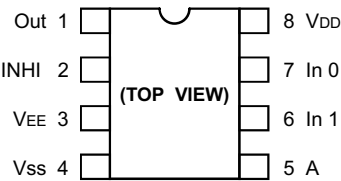


Truth Table

INPUTS				OUTPUTS		Function
CLR	PR	D	CK	Q	Q-bar	
L	H	*	*	L	H	Clear
H	L	*	*	H	L	Preset
L	L	*	*	H	H	—
H	H	L	f	L	H	—
H	H	H	f	H	L	—
H	H	*	f	Qn	Qn-bar	No Change

* : Don't care.

3.4. IC4 on the Servo Board is using the 2-Channel Multiplexer/Demultiplexer IC YWTC4W53FUL.
Description of this IC is as follows:

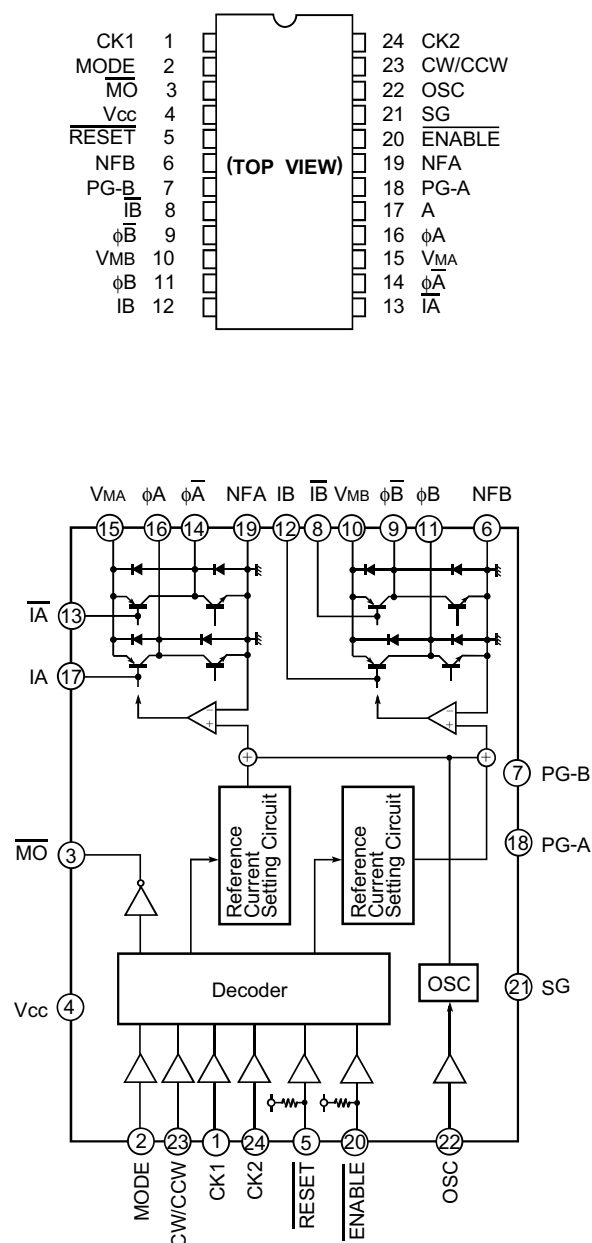


Truth Table

INPUTS		OUT
INH1	A	
L	L	IN 0
L	H	IN 1
H		None

: Don't Care.

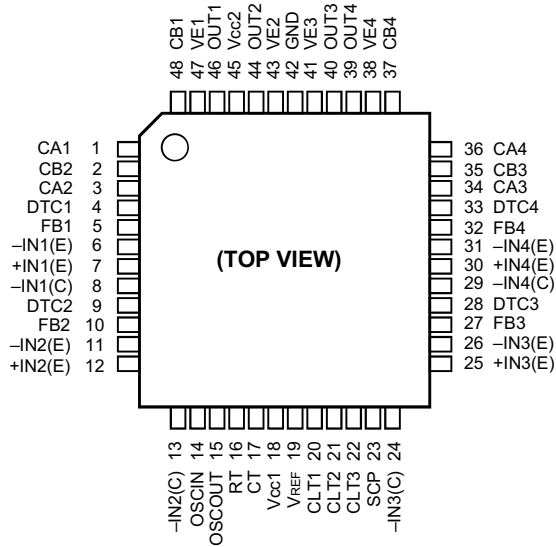
Description of this IC is as follows:



Pin	Name	I/O	Description
1	CK1	I	Clock Pulse input terminal.
2	MODE	I	Mode Setting signal input terminal.
3	$\overline{MO}$	O	Monitor signal output terminal.
4	Vcc	–	Power supply terminal.
5	$\overline{RESET}$	I	Reset Pulse input terminal.
6	NFB	I	B-channel Current Detect signal input terminal.
7	PG-B	–	B-channel ground terminal.
8	$\overline{IB}$	O	$\overline{IB}$ signal output terminal.
9	$\phi\overline{B}$	O	B-channel inverted signal output terminal.
10	VMB	–	Power supply terminal.
11	ϕB	O	B-channel non-inverted signal output terminal.
12	IB	O	IB signal output terminal.
13	$\overline{IA}$	O	$\overline{IA}$ signal output terminal.
14	$\phi\overline{A}$	O	A-channel inverted signal output terminal.
15	VMA	–	Power supply terminal.
16	ϕA	O	A-channel non-inverted signal output terminal.
17	IA	O	IA signal output terminal.
18	PG-A	–	A-channel ground terminal.
19	NFA	I	A-channel Current Detect signal input terminal.
20	$\overline{ENABLE}$	I	Enable signal input terminal.
21	SG	–	Ground terminal.
22	OSC	I	Oscillator input terminal.
23	CW/CCW	I	Clockwise or Counterclockwise Select signal input terminal.
24	CK2	I	Clock Pulse input terminal.

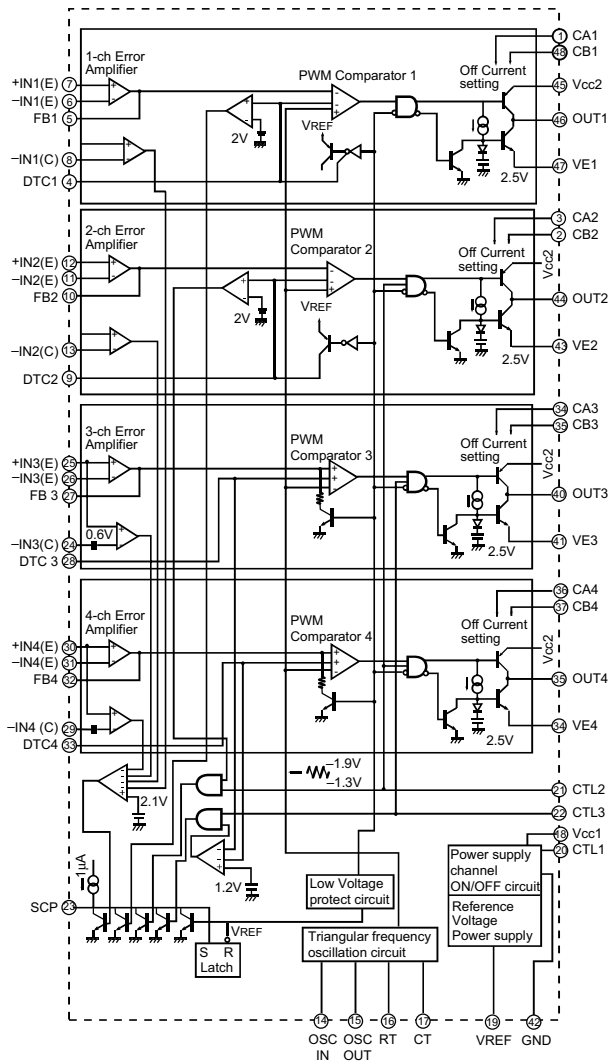
3.6. IC11 on the Servo Board is using the Switching Regulator Controller IC YWMB3785APF.

Description of this IC is as follows:



Pin	Name	I/O	Description
1	CA1	–	CA signal setting terminal.
2	CB1	–	CB signal setting terminal.
3	CA2	–	CA signal setting terminal.
4	DTC1	I	Dead Time Control signal input terminal.
5	FB1	O	FB signal output terminal.
6	–IN1(E)	I	–IN1(E) signal input terminal.
7	+IN1(E)	I	+IN1(E) signal input terminal.
8	–IN1(C)	I	–IN1(C) signal input terminal.
9	DTC2	I	Dead Time Control signal input terminal.
10	FB2	O	FB signal output terminal.
11	–IN2(E)	I	–IN2(E) signal input terminal.
12	–IN2(E)	I	–IN2(E) signal input terminal.
13	–IN2(C)	I	–IN2(C) signal input terminal.
14	OSCIN	I	Oscillator signal input terminal.
15	OSCOU	O	Oscillator signal output terminal.
16	RT	–	Resistor connecting terminal for Triangular frequency.
17	CT	–	Capacitor connecting terminal for Triangular frequency.
18	Vcc1	–	Power supply terminal.
19	VREF	I	Reference Voltage input terminal.
20	CTL1	I	Control signal input terminals.
21	CTL2	I	
22	CTL3	I	

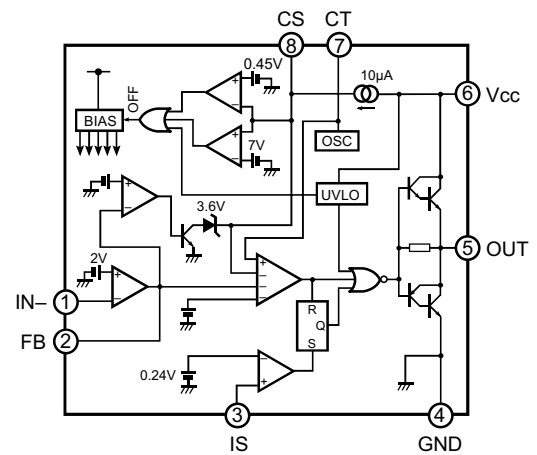
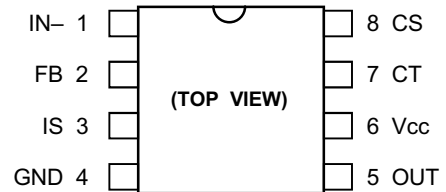
Pin	Name	I/O	Description
23	SCP	I	Short Circuit Protection signal input terminal.
24	–IN3(E)	I	–IN3(E) signal input terminal.
25	+IN3(E)	I	+IN3(E) signal input terminal.
26	–IN3(C)	I	–IN3(C) signal input terminal.
27	FB3	O	FB signal output terminal.
28	DTC3	I	Dead Time Control signal input terminal.
29	–IN4(E)	I	–IN4(E) signal input terminal.
30	+IN4(E)	I	+IN4(E) signal input terminal.
31	–IN4(C)	I	–IN4(C) signal input terminal.
32	FB4	O	FB signal output terminal.
33	DTC4	I	Dead Time Control signal input terminal.
34	CA3	–	CA signal setting terminal.
35	CB3	–	CB signal setting terminal.
36	CA4	–	CA signal setting terminal.
37	CB4	–	CB signal setting terminal.
38	VE4	I	VE signal input terminal.
39	OUT4	O	Totem Pole output terminals.
40	OUT3	O	
41	VE3	I	VE signal input terminal.
42	GND	–	Ground terminal.
43	VE2	I	VE signal input terminal.
44	OUT2	O	Totem Pole output terminal.
45	Vcc2	–	Power supply terminal.
46	OUT1	O	Totem Pole output terminal.
47	VE1	I	VE signal input terminal.
48	CB4	–	CB signal setting terminal.



4. Power Board

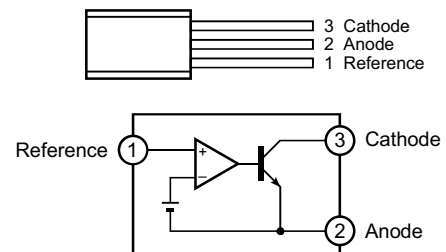
4.1. IC1 on the Power Board is using the PWM Switching Regulator Controller IC YWFA5304P.

Description of this IC is as follows:



4.2. IC2 on the Power Board is using the Variable Shunt Regulator IC YWTA76431S.

Description of this IC is as follows:



About Your Computer

In order to run the E.V.R. (Electric Variable Resistor) adjustment program your IBM-PC/AT Type or compatible must meet the following requirements:

- The DOS Operating System must be 3.3 or higher.
- The Operating System must be 100% compatible with your computer.
- The memory in your IBM-PC must be at least 640K-bytes, and 512K-bytes shall be available to the E.V.R. adjustment program.

Installing E.V.R. Adjustment Program

- The Example given here is for A 2 drive computer, your procedure might vary slightly depending on drive configuration.
- Formatting new disk and making a copy of DOS Operating System.
 - a) Insert disk containing DOS operating system into your floppy drive (for example, drive A) and type **A:**
 - b) Insert new disk into your floppy drive (for example, drive B).
 - c) Format and make a copy of DOS operating system from your original disk to new disk by typing **FORMAT B: / S** and press the **ENTER** key.
 - d) Type **COPY ANSI. SYS B:** and press the **ENTER** key.
- Install E.V.R. Adjustment Program onto formatted new disk with DOS operating system.
 - e) Take out original disk containing DOS operating system from your floppy drive (drive A) and insert disk containing E.V.R. adjustment program into your floppy drive (drive A) and type **A:**
 - f) At the prompt, type **CD IBMPC** and press the **ENTER** key.
 - g) If required, type **COPY CONFIG. SYS B:** and press the **ENTER** key.
 - h) Type **CD PAL** for PAL.
 - i) Type **COPY ADJ2E. EXE B:** and press the **ENTER** key.
 - j) Type **CD ** and press the **ENTER** key.
 - k) Type **CD SEQ** and press the **ENTER** key.
 - l) Type **COPY CS400E. SEQ B:** and press the **ENTER** key.
 - m) Type **CD ** and press the **ENTER** key.
 - n) Type **CD EVR** and press the **ENTER** key.
 - o) Type **COPY CS400E. EVR B:** and press the **ENTER** key.
 - p) After completing installation of program, you are ready to use the E.V.R. adjustment program.

Note:

When completed the new disk should be a bootable disk which contains the following files:

- | | |
|------------|-----|
| 1. COMMAND | COM |
| 2. ANSI | SYS |
| 3. CONFIG | SYS |
| 4. ADJ2E | EXE |
| 5. CS400E | SEQ |
| 6. CS400E | EVR |

ADJUSTMENT PROCEDURE

1. Test Equipment Required

- The following Test Equipments are required for adjustment of the Combination Camera WV-CS400.

- Oscilloscope
- Frequency Counter
- Digital Voltmeter
- Vectorscope
- Waveform Monitor
- Underscanned Colour Video Monitor
- 12 V DC Power Supply Unit
- Lux Meter
- Lighting (275 footcandles (2,750 lx), Colour Temperature 3,200K and 5,100K)
- Personal Computer (IBM PC/AT type or equivalent)
- Standard Straight RS-232C Cable
- White Chart or White Paper
- Manual Iris Lens
- ALC Lens
- Resolution Test Chart
- Colour Temperature Conversion Filters as shown in the Table 1-1.

	Part No.	Description
KODAK	80B	More than 3x3 cm (1 sheet)
FUJI	LBB-12	More than 3x3 cm (1 sheet)
KENKO	C12	More than 20mmø (1 Piece)
HOYA	LB-120	More than 20mmø (1 Piece)
NICON	B12	More than 20mmø (1 Piece)

Table 1-1

- Logarithmic Gray Scale Chart (Part Number: YWV2310RB99) as shown Fig. 1-1.

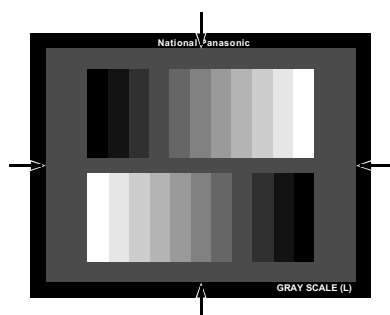


Fig. 1-1

- Colour Chip Chart (Part Number: YWV2100RB98) as shown in Fig. 1-2.

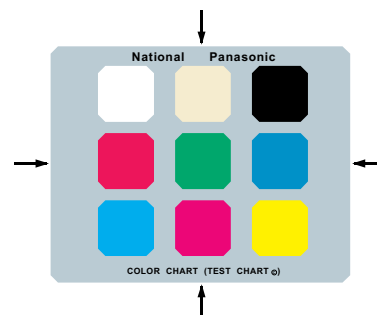


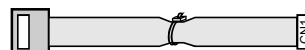
Fig. 1-2

- Electric Variable Resistor (E.V.R.) Adjustment Kit (Part No. : YWV0EA0182AN) as shown in Fig. 1-3.

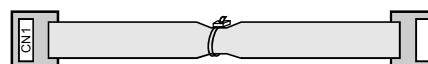


Fig. 1-3

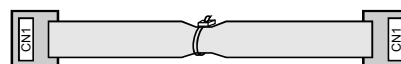
- Extension Board Ass'y (Part Number: YWV0EA1058AN) as shown in the Figures.
(Following Extension Boards and Extension Cables are included)
- Extension Cable A for CN1 of the Servo Board and the Pan Motor Connector.



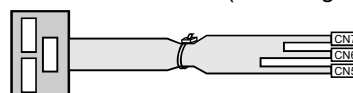
- Extension cable B for CN1 of the Lens Drive Board and the Lens.



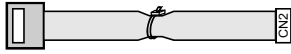
- Extension Cable C for CN1 of the Drive Board and the CN1 of the Sensor Board.



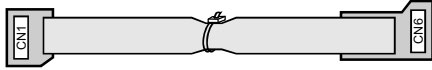
- Extension Cable D for the Slip Ring and the CN5, CN6 and CN7 of the Servo Board.



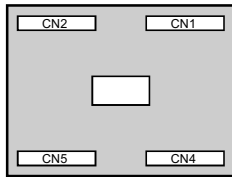
- Extension Cable E for CN2 of the Servo Board and the Tilt Motor Connector.



- Extension Cable F for CN3 of the Servo Board and CN6 of the Drive Board.



- Extension Board G for CN1 and CN2 of the Digital Board and CN4 and CN5 of the Drive Board.



2. Disassembling Procedure for Adjustment

- Referring to Fig. 2-1, remove two screws that secure the Dome Cover and turn the Dome Cover to counterclockwise direction, then remove the Dome Cover.

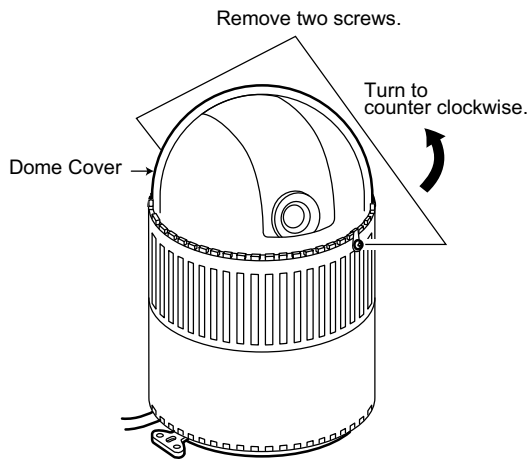


Fig. 2-1

- Referring to Fig. 2-2, remove one screw that secure the Lower Diecast Case, then turn the Lower Diecast Case to the counterclockwise direction and remove the Lower Diecast Case.

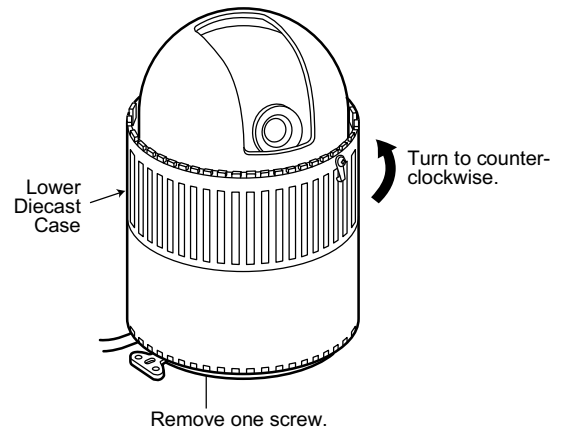


Fig. 2-2

- Referring to Fig. 2-3, disconnect one connector, remove four screws that secure the Lower Diecast Case and remove the Lower Diecast Case.

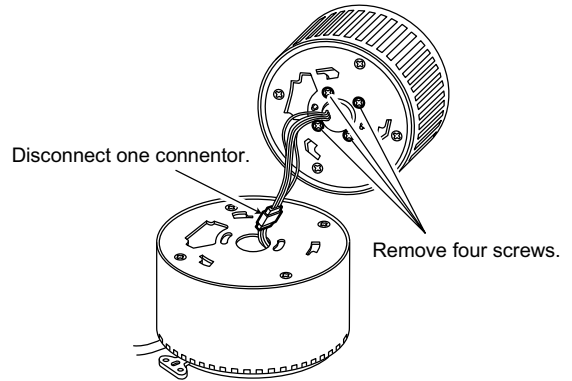


Fig. 2-3

- Referring to Fig. 2-4, remove three Adhesive Tapes and two screws that secure the Black Cover and pull up the Black Cover.

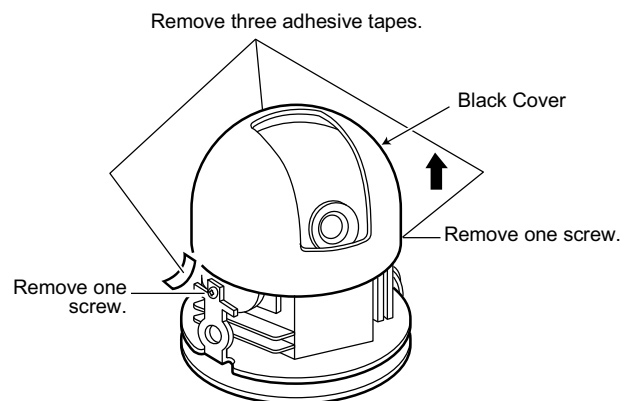


Fig. 2-4

- Referring to Fig. 2-5, remove three screws that secure the Lens Cover and remove the Lens Cover.

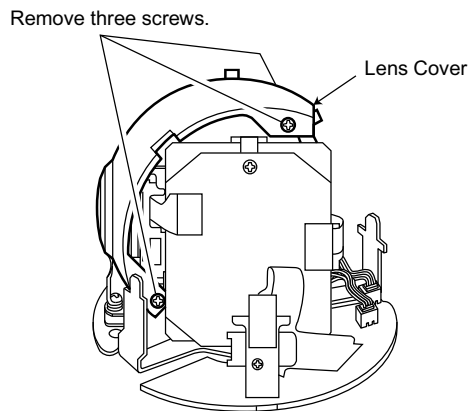


Fig. 2-5

- Referring to Fig. 2-6, remove two screws that secure the Drive Board and Digital Board and remove the Drive Board and Digital Board.

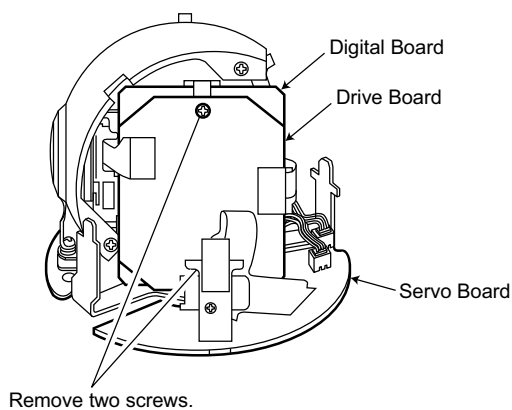


Fig. 2-6

- Referring to Fig. 2-7, disconnect one connector from the Lens Drive Board, remove two screws that secure the Lens Drive Board and remove the Lens Drive Board.

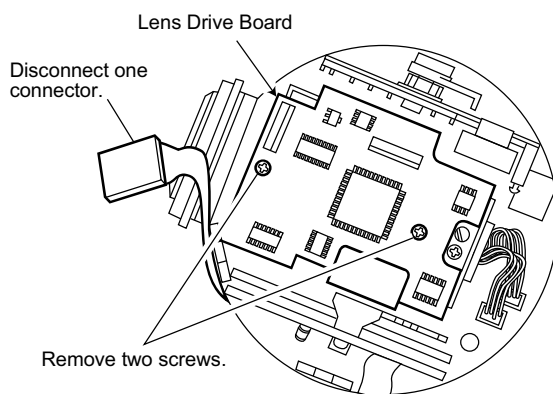


Fig. 2-7

- Referring to Fig. 2-8, remove three screws that secure the Servo Main Board and remove the Servo Board.

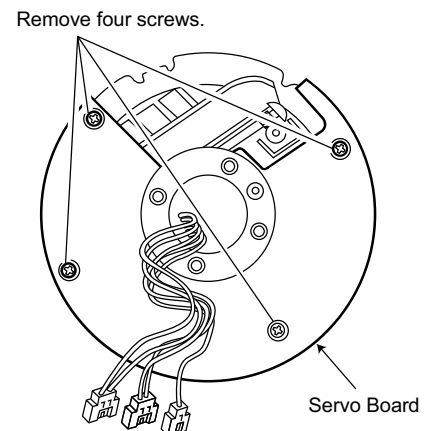


Fig. 2-8

- Referring to Fig. 2-9, remove two screws that secure the Sensor Board and remove the Sensor Board.

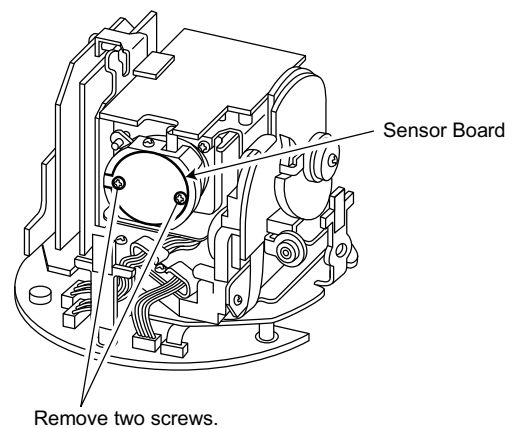


Fig. 2-9

- When adjusting the Camera use three Extension Cables and one Extension board as shown in Fig. 2-10.

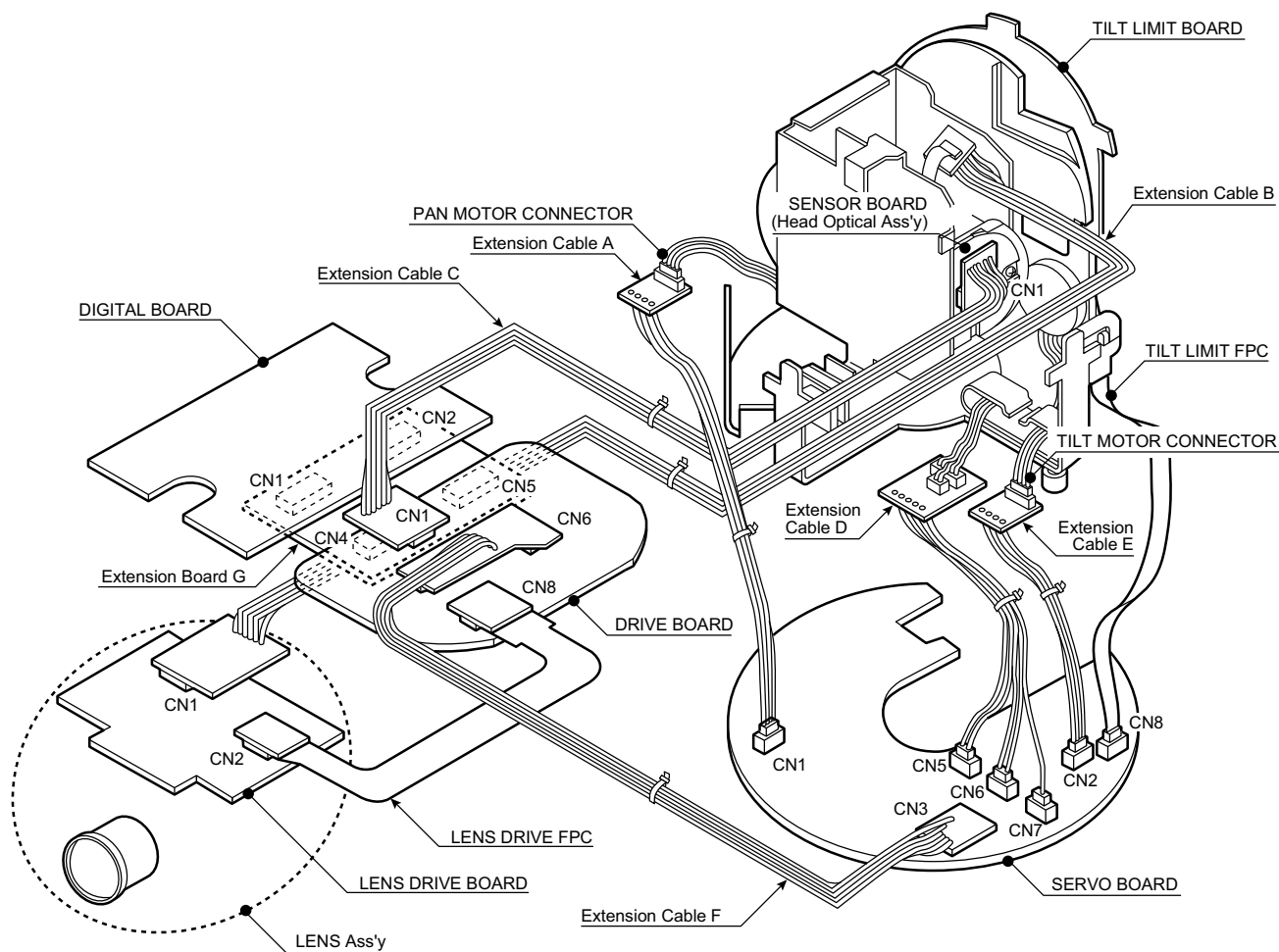


Fig. 2-10

- Connect Extension Cable A between CN1 of the Servo Board and the Pan Motor Connector.
- Connect Extension Cable B between CN1 of the Lens Drive Board and the Lens.
- Connect Extension Cable C between CN1 of the Drive Board and CN1 of the Sensor Board.
- Connect Extension Cable D between CN5, CN6 and CN7 of the Servo Board and the Slip Ring.
- Connect Extension Cable E between CN2 of the Servo Board and the Tilt Motor Connector.
- Connect Extension Cable F between CN3 of the Servo Board and CN6 of the Drive Board.
- Connect Extension Board G between CN1 and CN2 of the Digital Board and CN4 and CN5 of the Drive Board.
- After wiring, turn on the Power Switch.

3. Connection and Setting Up for Adjustment

3.1. Connection

- The Fig. 3-1 shows the connection diagram for the adjustment procedure.

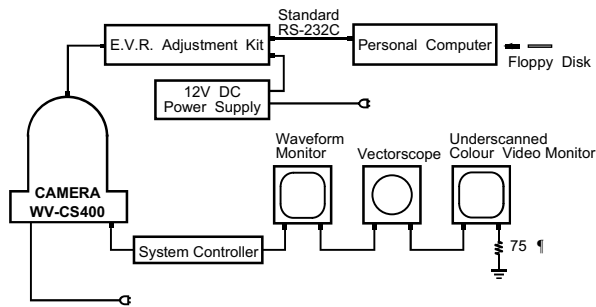


Fig. 3-1

- Connect the Underscanned Colour Video Monitor to the Video Output Connector of the System Controller through the Waveform Monitor and the Vectorscope using the coaxial cables.
- Connect the Video Output Cable of the WV-CS400 to the CAMERA INPUT Connector of the System Controller.
- Terminate the input terminal of the Underscanned Colour Video Monitor with 75 Ω.
- Connect extension cable of the E.V.R. Adjustment Kit to CN3 on the Drive Board of the WV-CS400.
- Connect the 12 V DC Power Supply Unit to the E.V.R. Adjustment Kit.
- Connect the E.V.R. Adjustment Kit to IBM PC/AT type using the Standard Straight RS-232C cable.
- Connect the probe of the Digital Voltmeter, Oscilloscope or Frequency Counter at the desired Test Point in each adjustment step.

3.2. Setting Up for Standard Picture

- The adjustment should be done after 10 minutes warm-up.
- Set the Logarithmic Gray Scale Chart.
- Incident light of $2,750 \pm 50$ lx on the Logarithmic Gray Scale Chart.
- Aim the Camera at the Logarithmic Gray Scale Chart.
- Set the Camera so that the Logarithmic Gray Scale Chart becomes full picture on the Underscanned Colour Video Monitor by the System Controller.

- Connect the Oscilloscope to pin 1 (CDS OUT) of CN2 on the Drive Board.
- Adjust the Lens Focus to obtain correct focal point by the System Controller.
- Set the Lens Iris so that the peak level of the Gray Scale from the Blanking level becomes 300 mV as shown in Fig. 3-2.

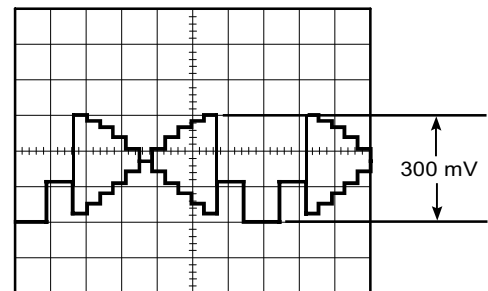


Fig. 3-2

- The adjustments should be done with this Standard Picture, unless otherwise specified.

4. Adjustment Procedure

- Refer to the Location of the Test Points and Adjusting Controls on the page 46.

■ Adjustment Procedure-1

(1) VSUB Adjustment

Test Point: TD3 (V_{SUB})

Sensor Board

Adjust: VR2 (V_{SUB})

Sensor Board

- Check the Rank letter on the Sensor Board as shown in Fig. 4-1.

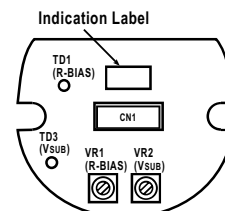


Fig. 4-1

- Mount F1.4 Manual Iris Lens.
- Open the Lens Iris fully.
- Connect the Digital Voltmeter to the TD3.
- Adjust VR2 to obtain indicated voltage ± 0.03 V on the Sensor Board as shown in Table 4-1.

Rank	E	f	G	h	J	K	L	m	N	P
Voltage	9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.5	13.0	13.5
Rank	Q	R	S	T	U	V	W	X	Y	Z
Voltage	14.0	14.5	15.0	15.5	16.0	16.5	17.0	17.5	18.0	18.5

Table 4-1

(2) Reset Bias Adjustment

Test Point: TD1 (R-BIAS)

Sensor Board

Adjust: VR1 (R-BIAS)

Sensor Board

- Check the Rank letter on the Sensor Board as shown in Fig. 4-1.
- Connect the Digital Voltmeter to the TD1.
- Adjust VR1 so that the bottom level of the Reset Noise becomes indicated voltage ± 0.03 V on the Sensor Board as shown in Table 4-2.

Rank	1	2	3	4	5	6	7
Voltage	1.0	1.5	2.0	2.5	3.0	3.5	4.0

Table 4-2

(3) Drive VCO Adjustment

Test Point: TP1 (DRIVE VCO)

Drive Board

Adjust: L1 (DRIVE VCO)

Drive Board

- Connect the Digital Voltmeter to TP1.
- Adjust L1 to obtain 1.7 ± 0.2 V DC.

(4) Back Focus Adjustment

Test Point: Video Output Connector

Adjust: Back Focus Adjustment Screw

- Referring to Fig. 4-2, loosen the Back Focus Locking Screw.
- Aim the Camera at the Resolution Test Chart further than 1.3 meters.
- Zoom out and adjust the Focus by the System Controller.
- Adjust the Back Focus Adjusting Screw by the flat head screwdriver for best focal point as shown in Fig. 4-2.
- Zoom in the Lens by the System Controller.
- Adjust best focal point by the System Controller.
- Repeat adjust between the WIDE mode and TELE mode to obtain best focal point.
- Tighten the Back Focus Locking Screw.
- Aim the Camera at the Resolution Test Chart further than 15 meters.

- Confirm that the focal point should be obtained by Focus Control of the System Controller.
- Aim the Camera at the Resolution Test Chart further than 1.2 meters.
- Confirm that the focal point should be obtained by Focus Control of the System Controller.

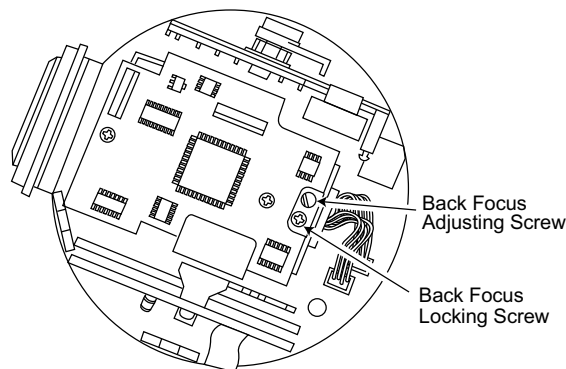


Fig. 4-2

■ Adjustment Procedure-2 (E.V.R. Adjustment)

- Connect extension cable of the E.V.R. Adjustment Kit to CN3 on the Drive Board.
- Connect the E.V.R. Adjustment Kit to IBM PC/AT type using the Standard Straight RS-232C cable.
- Insert new disk containing DOS Operating System and the E.V.R. Adjustment program into IBM PC/AT and turns on the Power Switch of IBM PC/AT.
- At the prompt, type **ADJ2E CS400E** and press the **ENTER** key following initial menu will be displayed in Table 4-3.

PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co. CCTV PRODUCT: CS400 EEPROM: 0 ***** MENU ***** Page (1/1) ***** PAL	
1. SC Frequency	6.1.(C). KNEE LEVEL CHECK
3. LL PHASE	6.1.(D). LOW LIGHT LEVEL CHECK
4.1. HI CLIP LEVEL	7.1.(A).1. BURST LEVEL, PHASE
4.2.(A). OB	7.1.(A).2. BURST LEVEL, PHASE
4.2.(B). PEDESTAL	7.1.(B). 3200K CHROMA PHASE
4.2.(C). LOW CLIP	7.2.(A).1. WB 3200K MANU OFFSET R
4.3.(1). Y GAIN INITIALIZE 1	7.2.(A).2. WB 3200K MANU OFFSET B
4.3.(12). Y GAIN INITIALIZE 2	7.2.(B).1. WB 5100K ATW LIMIT R
4.3.(A). AGC OFF GAIN	7.2.(B).2. WB 5100K ATW LIMIT B
4.3.(B). AD/IN GAIN	7.3.(A).1. 3200K R_GAIN
4.3.(C). VIDEO OUT GAIN	7.3.(A).2. 3200K B_GAIN
4.4.(A). ALC DC	7.3.(A).3. 3200K R_MATRIX
4.4.(B). ALC LEVEL	7.3.(B).1. 5100K R_GAIN
4.4.(C). BLC LEVEL	7.3.(B).2. 5100K B_GAIN
5.1.(1). MANUAL IRIS 1	7.4. HIGHLIGHT CHROMA CLIP
5.1.(2). MANUAL IRIS 1	
6.1.(A).1. ALC LEVEL CHECK	
6.1.(A).2. AGC LEVEL CHECK	
6.1.(A).3. BLC LEVEL CHECK	
6.1.(B). PEDESTAL CHECK	
<CONTENTS> TP7 (SC) [SYNC] 4433619+-10Hz	
<INSTRUCTION> PLEASE CHOOSE MENU DATA BY ARROW-DATA	
LOAD(F1) QUIT(F3) SAVE(F5)	

Table 4-3

- Press the **SAVE (F5)** key of the Computer, then the Computer will ask you for the file name.
- Give appropriate file name to the Computer. But do not use **CS400E.EVR** for your file.
- This saving procedure is recommended to keep the current adjustment status of the Camera.
- Press the **LOAD (F1)** key and type **CS400E.EVR** and press the **ENTER** key for presetting adjustment of the Camera.
- Press the **ENTER** key to start of adjustment.

Notes:

- **EEPROM** mentioned in this adjustment procedure is IC4 on the Digital Board.
- **RAM** mentioned in this adjustment procedure is internal RAM of IC8 on the Digital Board.
- **C.DSP** mentioned in this adjustment procedure is IC3 on the Digital Board.

(1).1. Subcarrier Frequency Adjustment

Test Point: TP2 (SC VCXO) **Digital Board**

Adjust: RAM (E02) **Digital Board**

- The menu as shown in Table 4-4 will be displayed.

PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co. CCTV PRODUCT: CS400 EEPROM: 0 ***** EVR ***** PAL	
1. SC FREQUENCY TP2 (SC VCXO) [DIGITAL] 4433619 + - 10Hz	

<DEVICE>	: RAM14
<ADDRESS>	: E02
<DATA>	: 5F — 5F 
<MESSAGE>	:
<INSTRUCTION> ADJUST DATA BY ARROW-KEY. ROLLDOWN: PREVIOUS ITEM	
LOAD(F1)	QUIT(F3) SAVE(F5)

Table 4-4

- Connect the Frequency Counter to TP2.
- Adjust data with the **ARROW** keys so that the Subcarrier Frequency becomes 4.433619 MHz $\pm$ 10 Hz.
- Press the **ENTER** key for next adjustment.

(2).3. Line Lock Phase Adjustment

Test Point: Video Output Connector

AC Live Waveform

Adjust: RAM (034) **Digital Board**

- The menu as shown in Table 4-5 will be displayed.

PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co. CCTV PRODUCT: CS400 EEPROM: 0 ***** EVR ***** PAL	
3. LL PHASE VIDEO OUT 2H + - 4H	

<DEVICE>	: RAM0
<ADDRESS>	: 034
<DATA>	: 37 — 37 
<MESSAGE>	:
<INSTRUCTION> ADJUST DATA BY ARROW-KEY. ROLLDOWN: PREVIOUS ITEM	
LOAD(F1)	QUIT(F3) SAVE(F5)

Table 4-5

- Connect the CH1 of the Oscilloscope to Video Output Connector.
- Connect the CH2 of the Oscilloscope to the AC Power Line.
- Trigger the Oscilloscope at the V-rate.
- Adjust data with the **ARROW** keys so that the Line Lock Phase becomes 2 H $\pm$ 4 H as shown in Fig. 4-3.

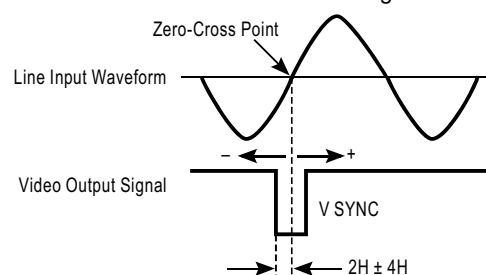


Fig. 4-3

- Press the **ENTER** key for next adjustment.

(3).4.1. High Clip Level Adjustment

Test Point: Video Output Connector

Adjust: RAM (E00) **Digital Board**

- The menu as shown in Table 4-6 will be displayed.

PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co. CCTV PRODUCT: CS400 EEPROM: 0 ***** EVR ***** PAL	
4.1. HIGH CLIP VIDEO OUT 805 +30 -0 mV	

<DEVICE>	: RAM14
<ADDRESS>	: E00
<DATA>	: 51 — 51 
<MESSAGE>	:
<INSTRUCTION> ADJUST DATA BY ARROW-KEY. ROLLDOWN: PREVIOUS ITEM	
LOAD(F1)	QUIT(F3) SAVE(F5)

Table 4-6

- Aim the Camera at the Logarithmic Gray Scale Chart.
- Open the Lens Iris fully.
- Connect the terminated Oscilloscope with 75 Ω to the Video Output Connector.

- Adjust data with the **ARROW** keys so that the High Clip Level becomes $805 \begin{smallmatrix} +30 \\ -0 \end{smallmatrix}$ mV as shown in Fig. 4-4.

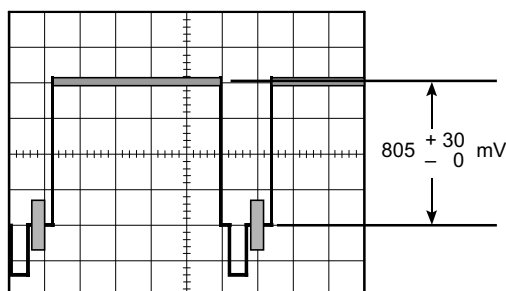


Fig. 4-4

- Press the **ENTER** key for next adjustment.

(4).4.2.(A). OB Adjustment

Test Point: RAM (09C) **Digital Board**

Adjust: RAM (0A3) **Digital Board**

- The menu as shown in Table 4-7 will be displayed.

PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co. CCTV PRODUCT: CS400 EEPROM: 0 ***** EVR ***** PAL	
4.2.(A) OB LENS CLOSE, MEASURE 01	

<DEVICE>	: RAM0
<ADDRESS>	: 0A3
<DATA>	: 23 — 23
<MEASURE>	: 01
<MESSAGE>	:
<INSTRUCTION> ADJUST DATA BY ARROW-KEY. ROLLDOWN: PREVIOUS ITEM	
LOAD(F1) QUIT(F3) SAVE(F5)	

Table 4-7

- Cap on the Lens.
- Adjust data with the **ARROW** keys so that the measure data becomes 01.
- Press the **ENTER** key for next adjustment.

(5).4.2.(B). Pedestal Adjustment

Test Point: Video Output Connector

Adjust: RAM (032) **Digital Board**

- The menu as shown in Table 4-8 will be displayed.

PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co. CCTV PRODUCT: CS400 EEPROM: 0 ***** EVR ***** PAL	
4.2.(B) PEDESTAL LENS CLOSE, VIDEO OUT 50 + - 5mV	

<DEVICE>	: RAM0
<ADDRESS>	: 032
<DATA>	: 09 — 09
<MESSAGE>	:
<INSTRUCTION> ADJUST DATA BY ARROW-KEY. ROLLDOWN: PREVIOUS ITEM	
LOAD(F1) QUIT(F3) SAVE(F5)	

Table 4-8

- Adjust data with the **ARROW** keys so that the Pedestal level becomes 50 ± 5 mV as shown in Fig. 4-5.

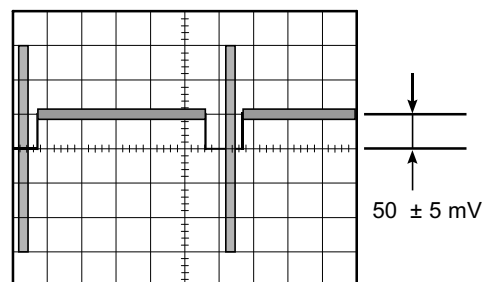


Fig. 4-5

- Press the **ENTER** key for next adjustment.

(6).4.2.(C). Low Clip Adjustment

Test Point: Video Output Connector

Adjust: RAM (E03) **Digital Board**

- The menu as shown in Table 4-9 will be displayed.

PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co. CCTV PRODUCT: CS400 EEPROM: 0 ***** EVR ***** PAL	
4.2.(C) LOW CLIP LENS CLOSE, VIDEO OUT 50 + - 5 mV	

<DEVICE>	: RAM14
<ADDRESS>	: E03
<DATA>	: 04 — 04
<MESSAGE>	:
<INSTRUCTION> ADJUST DATA BY ARROW-KEY. ROLLDOWN: PREVIOUS ITEM	
LOAD(F1) QUIT(F3) SAVE(F5)	

Table 4-10

- Cap on the Lens.
- Connect the terminated Oscilloscope with 75Ω to the Video Output Connector.
- Adjust data with the **ARROW** keys so that the Pedestal level becomes 50 ± 5 mV as shown in Fig. 4-6.

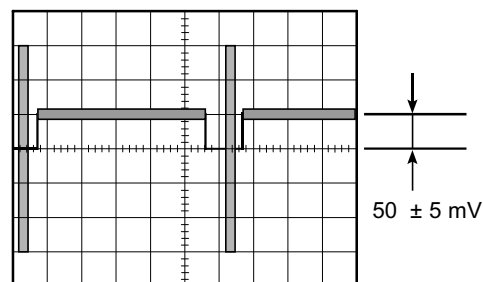


Fig. 4-6

- Press the **PAGE DOWN** key twice to return to (4).4.2.(A). OB Adjustment, and repeat adjustment steps (4).4.2.(A). and (6).4.2.(C). until both data become satisfactory.
- Press the **ENTER** key for next adjustment.

(7).4.3.(I1). Y Gain Initialize 1 Adjustment

Test Point: Pin 1 of CN2 (CDSOUT) **Drive Board**
Adjust: Lens Iris for Manual Lens
RAM (E0C) for ALC Lens **Digital Board**

- The menu as shown in Table 4-10 will be displayed.

```
PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co. CCTV PRODUCT: CS400 EEPROM: 0
***** EVR ***** PAL

4.3.(I1). Y GAIN INITIALIZE 1
CN2-1 (CDSOUT) 300 + - 30 mV, WITH ND8

*****
<DEVICE>      : RAM14
<ADDRESS>     : E0C
<DATA>        : 05 — 05
<MESSAGE>     :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY. ROLLDOWN: PREVIOUS ITEM
LOAD(F1)      QUIT(F3)      SAVE(F5)
```

Table 4-10

- Aim the Camera at the Logarithmic Gray Scale Chart.
- Mount the ND8 Filter on the Lens.
- Connect the Oscilloscope to the pin 1 of CN2.
- Set the Lens Iris so that the CDS OUT signal level at the pin 1 of CN2 becomes 300 mV as shown in Fig. 4-7 (for the Manual Lens).
- Adjust data with the **ARROW** keys so that the CDS OUT signal level becomes 300 mV as shown in Fig. 4-7 (for ALC Lens).

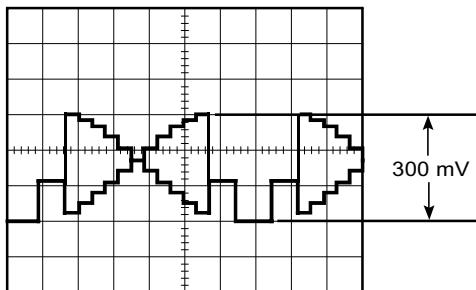


Fig. 4-7

- Press the **ENTER** key for next adjustment.

(8).4.3.(I2). Y Gain Initialize 2 Adjustment

Test Point: Pin 1 of CN2 (CDSOUT) **Drive Board**
Adjust: Lens Iris for Manual Lens
RAM (E0B) for ALC Lens **Digital Board**

- The menu as shown in Table 4-11 will be displayed.

```
PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co. CCTV PRODUCT: CS400 EEPROM: 0
***** EVR ***** PAL

4.3.(I1). Y GAIN INITIALIZE 2
CN2-1 (CDSOUT) 300 + - 30 mV, WITH ND8

*****
<DEVICE>      : RAM2
<ADDRESS>     : E0C
<DATA>        : 80 — 80
<MESSAGE>     :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY. ROLLDOWN: PREVIOUS ITEM
LOAD(F1)      QUIT(F3)      SAVE(F5)
```

Table 4-11

- Aim the Camera at the Logarithmic Gray Scale Chart.
- Mount the ND8 Filter on the Lens.
- Connect the Oscilloscope to the pin 1 of CN2.
- Set the Lens Iris so that the CDS OUT signal level at the pin 1 of CN2 becomes 300 mV as shown in Fig. 4-8 (for the Manual Lens).
- Adjust data with the **ARROW** keys so that the CDS OUT signal level becomes 300 mV as shown in Fig. 4-8 (for ALC Lens).

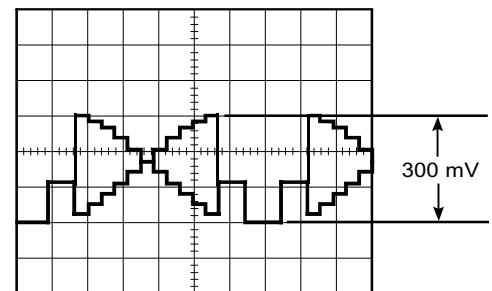


Fig. 4-8

- Press the **ENTER** key for next adjustment.

(9).4.3.(A). AGC Off Gain Adjustment

Test Point: Pin 3 of CN2 (AGCOUT) **Drive Board**
Adjust: RAM (097) **Digital Board**

- The menu as shown in Table 4-12 will be displayed.

```
PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co. CCTV PRODUCT: CS400 EEPROM: 0
***** EVR ***** PAL

4.3.(A). AGC OFF GAIN
CN2-3 (AGCOUT) [DRIVE] 300 + - 30 mV; CN2-1(CDSOUT) 300mV,
USE MANUAL LENS

*****
<DEVICE>      : RAM0
<ADDRESS>     : 097
<DATA>        : 0E — 0E
<MESSAGE>     :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY. ROLLDOWN: PREVIOUS ITEM
LOAD(F1)      QUIT(F3)      SAVE(F5)
```

Table 4-12

- Aim the Camera at the Logarithmic Gray Scale Chart.
- Connect the Oscilloscope to the pin 3 of CN2.

- Adjust data with the **ARROW** keys so that the AGC OUT signal level becomes 300 mV as shown in Fig. 4-9.

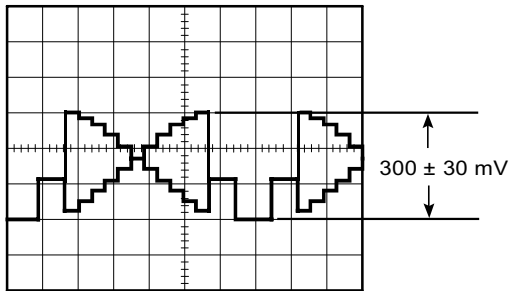


Fig. 4-9

- Press the **ENTER** key for next adjustment.

(10).4.3.(B). AD/IN Gain Adjustment

Test Point: Pin 5 of CN2 (AD/IN) **Drive Board**
RAM (0AC) **Digital Board**
Adjust: **RAM (E06)** **Digital Board**

- The menu as shown in Table 4-13 will be displayed.

PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co. CCTV PRODUCT: CS400 EEPROM: 0 ***** EVR ***** PAL	
4.3.(B). AD/IN GAIN CN2-5 (AD/IN) [DRIVE] 800 + - 30 mV : CN2-1(CDSOUT) 300mV USE MANUAL LENS	

<DEVICE>	: RAM14
<ADDRESS>	: E06
<DATA>	: 62 — 62
<MEASURE>	: 18
<MESSAGE>	:
<INSTRUCTION> ADJUST DATA BY ARROW-KEY. ROLLDOWN: PREVIOUS ITEM LOAD(F1) QUIT(F3) SAVE(F5)	

Table 4-13

- Aim the Camera at the Logarithmic Gray Scale Chart.
- Connect the Oscilloscope to the pin 5 of CN2.
- Adjust data with the **ARROW** keys so that the AD/IN signal level becomes 800 ± 30 mV as shown in Fig. 4-10.

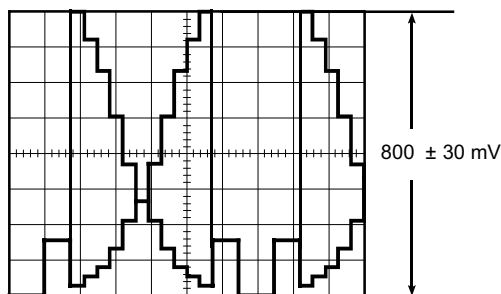


Fig. 4-10

- Press the **ENTER** key for next adjustment.

(11).4.3.(C). Video Out Gain Adjustment

Test Point: Video Output Connector

Adjust: **RAM (022)** **Digital Board**

- The menu as shown in Table 4-14 will be displayed.

PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co. CCTV PRODUCT: CS400 EEPROM: 0 ***** EVR ***** PAL	
4.3.(C). VIDEO OUT GAIN VIDEO OUT 700 + - 50 mV : CN2-1(CDSOUT) 300mV, USE MANUAL LENS	

<DEVICE>	: RAM0
<ADDRESS>	: 022
<DATA>	: 2E — 2E
<MESSAGE>	:
<INSTRUCTION> ADJUST DATA BY ARROW-KEY. ROLLDOWN: PREVIOUS ITEM LOAD(F1) QUIT(F3) SAVE(F5)	

Table 4-14

- Aim the Camera at the Logarithmic Gray Scale Chart.
- Connect the terminated Oscilloscope with 75Ω to the Video Output Connector.
- Adjust data with the **ARROW** keys so that the Video Output signal level becomes 700 ± 50 mV as shown in Fig. 4-11.

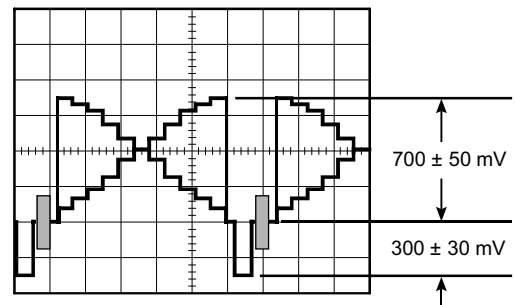


Fig. 4-11

- Press the **ENTER** key for next adjustment.

(12).4.4.(A). ALC DC Adjustment

Test Point: **RAM (112)** **Drive Board**
Pin 1 of CN2 (CDSOUT) **Drive Board**

Adjust: **RAM (099)** **Digital Board**

- The menu as shown in Table 4-15 will be displayed.

PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co. CCTV PRODUCT: CS400 EEPROM: 0 ***** EVR ***** PAL	
4.4.(A). ALC DC 00 < MEASURE < 05 : USE ALC LENS	

<DEVICE>	: RAM0
<ADDRESS>	: 099
<DATA>	: 00 — 00
<MEASURE>	: 00
<MESSAGE>	:
<INSTRUCTION> ADJUST DATA BY ARROW-KEY. ROLLDOWN: PREVIOUS ITEM LOAD(F1) QUIT(F3) SAVE(F5)	

Table 4-15

- Aim the Camera at the Logarithmic Gray Scale Chart.
- Connect the Oscilloscope to the pin 1 of CN2.
- Set the Lens Iris so that the CDS OUT signal level at the pin 1 of CN2 becomes 300 mV as shown in Fig. 4-12.

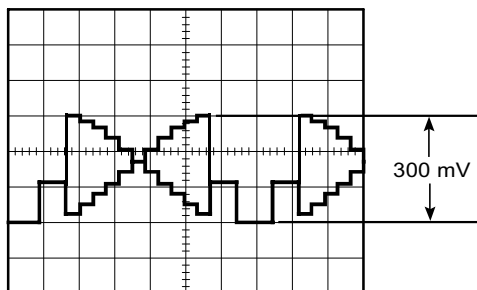


Fig. 4-12

- Adjust data with the **ARROW** keys so that the measured Data becomes between 00 and 05.
- Press the **ENTER** key for next adjustment.

(13).4.4.(B). ALC Level Adjustment

Test Point: Video Output Connector

Adjust: RAM (09D)

Digital Board

- The menu as shown in Table 4-16 will be displayed.

PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co. CCTV PRODUCT: CS400 EEPROM: 0 ***** EVR ***** PAL	
4.4.(B). ALC LEVEL VIDEO OUT 700 ± 50 mV	

<DEVICE>	: RAM1
<ADDRESS>	: 09D
<DATA>	: 24 — 24
<MESSAGE>	:
<INSTRUCTION> ADJUST DATA BY ARROW-KEY. ROLLDOWN: PREVIOUS ITEM	
LOAD(F1)	QUIT(F3) SAVE(F5)

Table 4-16

- Aim the Camera at the Logarithmic Gray Scale Chart.
- Connect the terminated Oscilloscope with 75Ω to the Video Output Connector.
- Adjust data with the **ARROW** keys so that the Video Output signal level becomes 700 ± 50 mV as shown in Fig. 4-13.

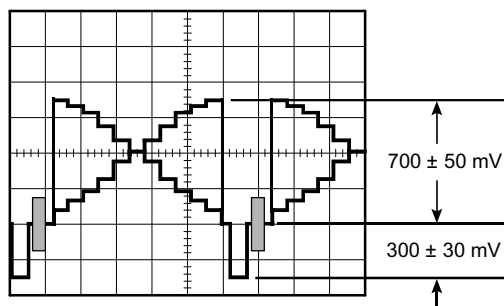


Fig. 4-13

- Press the **ENTER** key for next adjustment.

(14).4.4.(C). BLC Level Adjustment

Test Point: Video Output Connector

Adjust: RAM (09C)

Digital Board

- The menu as shown in Table 4-17 will be displayed.

PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co. CCTV PRODUCT: CS400 EEPROM: 0 ***** EVR ***** PAL	
4.4.(C). BLC LEVEL VIDEO OUT 700 ± 50 mV	

<DEVICE>	: RAM0
<ADDRESS>	: 09C
<DATA>	: 24 — 24
<MESSAGE>	:
<INSTRUCTION> ADJUST DATA BY ARROW-KEY. ROLLDOWN: PREVIOUS ITEM	
LOAD(F1)	QUIT(F3) SAVE(F5)

Table 4-17

- Aim the Camera at the Logarithmic Gray Scale Chart.
- Connect the terminated Oscilloscope with 75Ω to the Video Output Connector.
- Adjust data with the **ARROW** keys so that the Video Output signal level becomes 700 ± 50 mV as shown in Fig. 4-14.

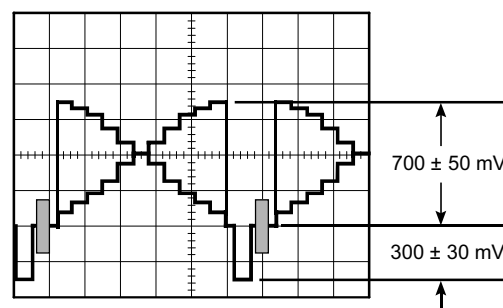


Fig. 4-14

- Press the **ENTER** key for next adjustment.

(15).5.1. Manual Iris 1 Confirmation

Adjust: DSP (D19)

Digital Board

- The menu as shown in Table 4-18 will be displayed.

PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co. CCTV PRODUCT: CS400 EEPROM: 0 ***** EVR ***** PAL	
5.1.(1). MANUAL IRIS 1 LENS CLOSE LEVEL SET	

<DEVICE>	: DSP13
<ADDRESS>	: D19
<DATA>	: E0 — E0
<MESSAGE>	:
<INSTRUCTION> ADJUST DATA BY ARROW-KEY. ROLLDOWN: PREVIOUS ITEM	
LOAD(F1)	QUIT(F3) SAVE(F5)

Table 4-18

- Confirm that the Lens Iris should be closed.
- Press the **ENTER** key for next adjustment.

(16).5.2. Manual Iris 2 Confirmation

Adjust: **DSP (D19)** **Digital Board**

- The menu as shown in Table 4-19 will be displayed.

PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co. CCTV PRODUCT: CS400 EEPROM: 0	
***** EVR ***** PAL	
5.1.(2). MANUAL IRIS 2	
LENS OPEN LEVEL SET	

<DEVICE>	: DSP13
<ADDRESS>	: D19
<DATA>	: 07 — 07 
<MESSAGE>	:
<INSTRUCTION> ADJUST DATA BY ARROW-KEY. ROLLDOWN: PREVIOUS ITEM	
LOAD(F1)	QUIT(F3)
	SAVE(F5)

Table 4-19

- Confirm that the Lens Iris should be open.
- Press the **ENTER** key for next adjustment.

(17).6.1.(A).(1). ALC Level Confirmation

Test Point: **Video Output Connector**

- The menu as shown in Table 4-20 will be displayed.

PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co. CCTV PRODUCT: CS400 EEPROM: 0	
***** EVR ***** PAL	
6.1.(A).(1). ALC LEVEL CHECK	
VIDEO OUT 700 ± 50 mV	

<DEVICE>	: RAM0
<ADDRESS>	: 09D
<DATA>	: 24 — 24 
<MESSAGE>	:
<INSTRUCTION> ADJUST DATA BY ARROW-KEY. ROLLDOWN: PREVIOUS ITEM	
LOAD(F1)	QUIT(F3)
	SAVE(F5)

Table 4-20

- Aim the Camera at the Logarithmic Gray Scale Chart.
- Connect the terminated Oscilloscope with 75Ω to the Video Output Connector.
- Confirm that the Video Output signal level becomes 700 ± 50 mV as shown in Fig. 4-15.

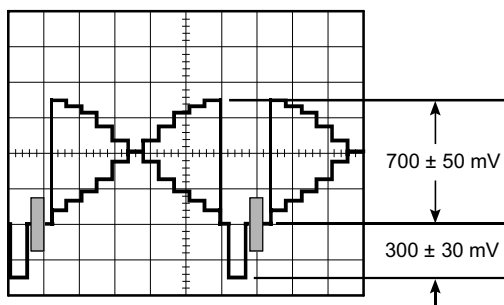


Fig. 4-15

- Press the **ENTER** key for next adjustment.

(18).6.1.(A).(2). AGC Level Confirmation

Test Point: **Video Output Connector**

- The menu as shown in Table 4-21 will be displayed.

PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co. CCTV PRODUCT: CS400 EEPROM: 0	
***** EVR ***** PAL	
6.1.(A).(2). AGC LEVEL CHECK	
VIDEO OUT 700 ± 50 mV	

<DEVICE>	: RAM
<ADDRESS>	: 09D
<DATA>	: 24 — 24 
<MESSAGE>	:
<INSTRUCTION> ADJUST DATA BY ARROW-KEY. ROLLDOWN: PREVIOUS ITEM	
LOAD(F1)	QUIT(F3)
	SAVE(F5)

Table 4-21

- Aim the Camera at the Logarithmic Gray Scale Chart.
- Connect the terminated Oscilloscope with 75Ω to the Video Output Connector.
- Confirm that the Video Output signal level becomes 700 ± 50 mV as shown in Fig. 4-16.

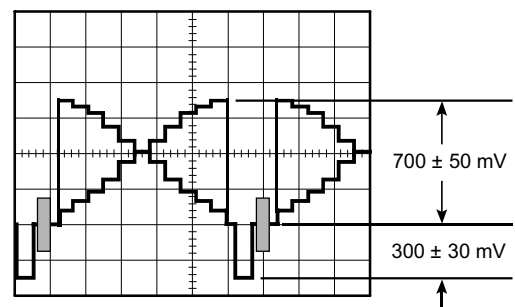


Fig. 4-16

- Press the **ENTER** key for next adjustment.

(19).6.1.(A).3. BLC Level Confirmation

Test Point: **Video Output Connector**

- The menu as shown in Table 4-22 will be displayed.

PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co. CCTV PRODUCT: CS400 EEPROM: 0	
***** EVR ***** PAL	
6.1.(A).(3). BLC LEVEL CHECK	
VIDEO OUT 700 ± 50 mV	

<DEVICE>	: RAM0
<ADDRESS>	: 09C
<DATA>	: 24 — 24 
<MESSAGE>	:
<INSTRUCTION> ADJUST DATA BY ARROW-KEY. ROLLDOWN: PREVIOUS ITEM	
LOAD(F1)	QUIT(F3)
	SAVE(F5)

Table 4-22

- Aim the Camera at the Logarithmic Gray Scale Chart.
- Connect the terminated Oscilloscope with 75Ω to the Video Output Connector.

- Confirm that the Video Output signal level becomes 700 ± 50 mV as shown in Fig. 4-17.

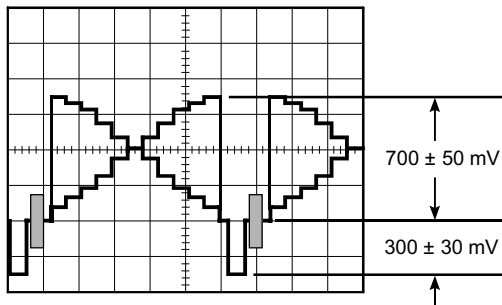


Fig. 4-17

- Press the **ENTER** key for next adjustment.

(20).6.1.(B). Pedestal Level Confirmation

Test Point: Video Output Connector

- The menu as shown in Table 4-23 will be displayed.

PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co. CCTV PRODUCT: CS400 EEPROM: 0	
***** EVR ***** PAL	
6.1.(B). BLC LEVEL	
VIDEO OUT PEDESTAL 50 + - 5 mV	

<DEVICE>	: RAM0
<ADDRESS>	: 032
<DATA>	: 09 - 09
<MESSAGE>	:
<INSTRUCTION> ADJUST DATA BY ARROW-KEY. ROLLDOWN: PREVIOUS ITEM	
LOAD(F1)	QUIT(F3)
SAVE(F5)	

Table 4-23

- Aim the Camera at the Logarithmic Gray Scale Chart.
- Connect the terminated Oscilloscope with 75Ω to the Video Output Connector.
- Close the Lens Iris.
- Confirm that the Pedestal level becomes 50 ± 5 mV as shown in Fig. 4-18.

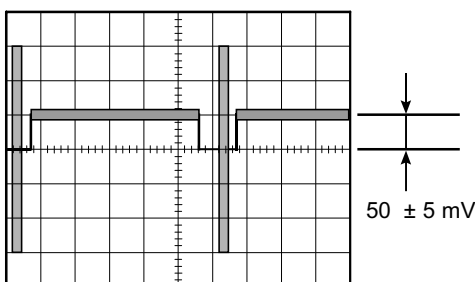


Fig. 4-18

- Press the **ENTER** key for next adjustment.

(21).6.1.(C). Knee Level Confirmation

Test Point: Video Output Connector

- The menu as shown in Table 4-24 will be displayed.

PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co. CCTV PRODUCT: CS400 EEPROM: 0	
***** EVR ***** PAL	
6.1.(C). KNEE LEVEL CHECK	
VIDEO OUT 805 - 0 + 35 mV	

<DEVICE>	: RAM0
<ADDRESS>	: 032
<DATA>	: 09 - 09
<MESSAGE>	:
<INSTRUCTION> ADJUST DATA BY ARROW-KEY. ROLLDOWN: PREVIOUS ITEM	
LOAD(F1)	QUIT(F3)
SAVE(F5)	

Table 4-24

- Aim the Camera at the White Chart.
- Connect the terminated Oscilloscope with 75Ω to the Video Output Connector.
- Open the Lens Iris.
- Confirm that the Knee level becomes $805 + 35 - 0$ mV as shown in Fig. 4-19.

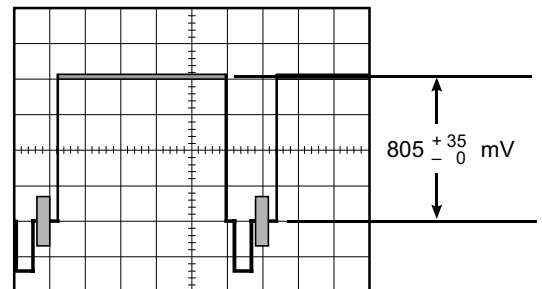


Fig. 4-19

- Press the **ENTER** key for next adjustment.

(22).6.1.(D). Low Light Level Confirmation

Test Point: Video Output Connector

- The menu as shown in Table 4-25 will be displayed.

PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co. CCTV PRODUCT: CS400 EEPROM: 0	
***** EVR ***** PAL	
6.1.(D). LOW LIGHT LEVEL CHECK	
VIDEO OUT 280 + - 35 mV	

<DEVICE>	: RAM0
<ADDRESS>	: 09D
<DATA>	: 09 - 09
<MESSAGE>	:
<INSTRUCTION> ADJUST DATA BY ARROW-KEY. ROLLDOWN: PREVIOUS ITEM	
LOAD(F1)	QUIT(F3)
SAVE(F5)	

Table 4-25

- Aim the Camera at the Logarithmic Gray Scale Chart.
- Connect the terminated Oscilloscope with 75Ω to the Video Output Connector.

- Change the lighting from 2,750 lx to 3 lx.
- Confirm that the Video signal level becomes 280 ± 35 mV as shown in Fig. 4-20.

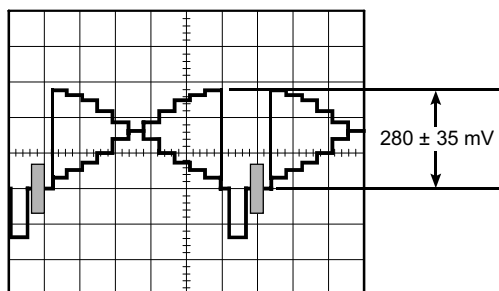


Fig. 4-20

- Return the lighting from 3 lx to 2,750 lx.
- Press the **ENTER** key for next adjustment.

(23).7.1.(A).1. Burst Level, Phase Adjustment

Test Point: Video Output Connector

Adjust: RAM (037)

Digital Board

- The menu as shown in Table 4-26 will be displayed.

PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co. CCTV PRODUCT: CS400 EEPROM: 0	
***** EVR ***** PAL	
7.1.(A).1. BURST LEVEL, PHASE	
VIDEO OUT 300 + - 10 mV, PHASE 90 DEG	

<DEVICE>	: RAM0
<ADDRESS>	: 037
<DATA>	: 1A — 1A
<MESSAGE>	:
<INSTRUCTION> ADJUST DATA BY ARROW-KEY. ROLLDOWN: PREVIOUS ITEM	
LOAD(F1)	QUIT(F3)
	SAVE(F5)

Table 4-26

- Aim the Camera at the Logarithmic Gray Scale Chart.
- Connect the terminated Oscilloscope with 75Ω to the Video Output Connector.
- Adjust data with the **ARROW** keys so that the Burst signal level becomes 300 ± 10 mV as shown in Fig. 4-21.

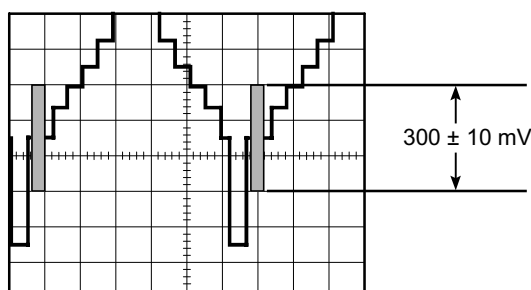


Fig. 4-21

- Press the **ENTER** key for next adjustment.

(24).7.1.(A).2. Burst Phase, Level Adjustment

Test Point: Video Output Connector

Adjust: RAM (038)

Digital Board

- The menu as shown in Table 4-27 will be displayed.

PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co. CCTV PRODUCT: CS400 EEPROM: 0	
***** EVR ***** PAL	
7.1.(A).2. BURST LEVEL, PHASE	
VIDEO OUT 300 + - 10 mV, 90 DEG	

<DEVICE>	: RAM0
<ADDRESS>	: 038
<DATA>	: 1A — 1A
<MESSAGE>	:
<INSTRUCTION> ADJUST DATA BY ARROW-KEY. ROLLDOWN: PREVIOUS ITEM	
LOAD(F1)	QUIT(F3)
	SAVE(F5)

Table 4-27

- Aim the Camera at the Logarithmic Gray Scale Chart.
- Set the Mode Switch of the Vectorscope to the "NTSC" mode.
- Adjust data with the **ARROW** keys so that the Burst Phase becomes $135 \pm 1^\circ$ as shown in Fig. 4-22.
- Change the Mode Switch of the Vectorscope from the "NTSC" mode to the "PAL" mode.
- Adjust data with the **ARROW** keys so that the Burst Phase becomes $90 \pm 2^\circ$ as shown in Fig. 4-22.

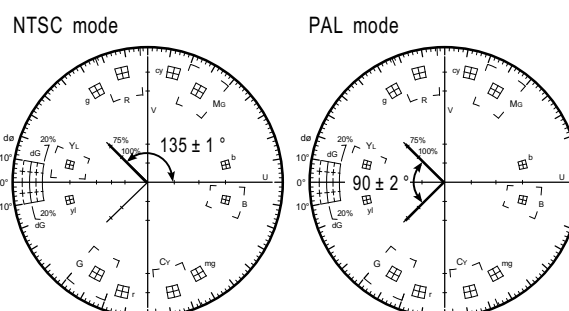


Fig. 4-22

- Press the **ENTER** key for next adjustment.
- Repeat adjust from (23).7.1.(A).1. to (24).7.1.(A).2. until both Burst Phase and Gain are adjusted to proper position as shown in Fig. 4-21 and Fig 4-22.

(25).7.1.(B). 3200K Chroma Phase Adjustment

Test Point: Video Output Connector

Adjust: RAM (E07)

Digital Board

- The menu as shown in Table 4-28 will be displayed.

PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co. CCTV PRODUCT: CS400 EEPROM: 0	
***** EVR ***** PAL	
7.1.(B) 3200K CHROMA PHASE	
VIDEO OUT POSITIONS AT CENTER	

<DEVICE>	: RAM14
<ADDRESS>	: E07
<DATA>	: 5C — 5C 
<MESSAGE>	:
<INSTRUCTION> ADJUST DATA BY ARROW-KEY. ROLLDOWN: PREVIOUS ITEM	
LOAD(F1)	QUIT(F3) SAVE(F5)

Table 4-28

- Aim the Camera at the Logarithmic Gray Scale Chart.
- Set the Gain Control of the Vectorscope to the Normal position.
- Adjust data with the **ARROW** keys so that both Red vectors match ($0 \pm 1^\circ$).
- Press the **ENTER** key for next adjustment.

(26).7.2.(A).1. R White Balance 3200K Manual Offset Adjustment

Test Point: Video Output Connector

Adjust: RAM (074)

Digital Board

- The menu as shown in Table 4-29 will be displayed.

PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co. CCTV PRODUCT: CS400 EEPROM: 0	
***** EVR ***** PAL	
7.2.(A).1. WB 3200K MANU OFFSET R	
VIDEO OUT <= 20 mV	

<DEVICE>	: RAM0
<ADDRESS>	: 074
<DATA>	: 56 — 56 
<MESSAGE>	:
<INSTRUCTION> ADJUST DATA BY ARROW-KEY. ROLLDOWN: PREVIOUS ITEM	
LOAD(F1)	QUIT(F3) SAVE(F5)

Table 4-29

- Set the Gain Control of the Vectorscope to maximum.
- Aim the Camera at the White Chart or White Paper.
- Adjust data with the **ARROW** keys so that the vector positions at the center of the Vectorscope as shown in Fig. 4-23.

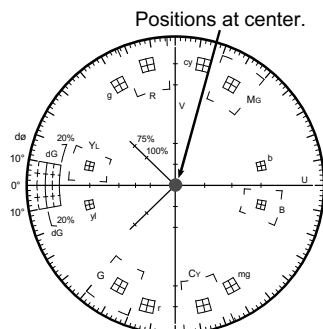


Fig. 4-23

- Press the **ENTER** key for next adjustment.

(27).7.2.(A).2. B White Balance 3200K Manual Offset Adjustment

Test Point: Video Output Connector

Adjust: RAM (075)

Digital Board

- The menu as shown in Table 4-30 will be displayed.

PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co. CCTV PRODUCT: CS400 EEPROM: 0	
***** EVR ***** PAL	
7.2.(A).2. WB 3200K MANU OFFSET B	
VIDEO OUT <= 20 mV	

<DEVICE>	: RAM0
<ADDRESS>	: 075
<DATA>	: 55 — 55 
<MESSAGE>	:
<INSTRUCTION> ADJUST DATA BY ARROW-KEY. ROLLDOWN: PREVIOUS ITEM	
LOAD(F1)	QUIT(F3) SAVE(F5)

Table 4-30

- Aim the Camera at the White Chart or White Paper.
- Adjust data with the **ARROW** keys so that the vector positions at the center of the Vectorscope as shown in Fig. 4-24.

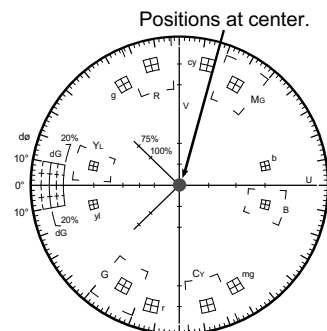


Fig. 4-24

- Repeat adjust from (26).7.2.(A).1. to (27).7.2.(A).2. until the vector positions at the centre of the Vectorscope.
- Press the **ENTER** key for next adjustment.

(28).7.2.(B).1. R White Balance 5100K ATW Limit Adjustment

Test Point: Video Output Connector

Adjust: RAM (07A)

Digital Board

- The menu as shown in Table 4-31 will be displayed.

PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co. CCTV PRODUCT: CS400 EEPROM: 0	
***** EVR ***** PAL	
7.2. (B).1. WB 5100K ATW LIMIT R	
VIDEO OUT <= 20 mV	

<DEVICE>	: RAM0
<ADDRESS>	: 07A
<DATA>	: 87 — 87 
<MESSAGE>	:
<INSTRUCTION> ADJUST DATA BY ARROW-KEY. ROLLDOWN: PREVIOUS ITEM	
LOAD(F1)	QUIT(F3) SAVE(F5)

Table 4-31

- Aim the Camera at the White Chart or White Paper.
- Change the Colour Temperature from 3,200 °K to 5,100 °K.
- Adjust data with the **ARROW** keys so that the vector positions at the center of the Vectorscope as shown in Fig. 4-25.

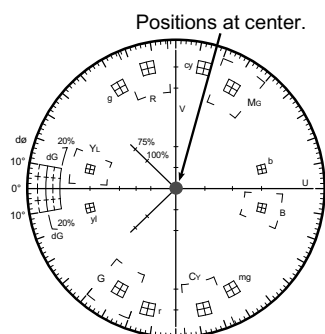


Fig. 4-25

- Press the **ENTER** key for next adjustment.

(29).7.2.(B).2. B White Balance 5100K ATW Limit Adjustment

Test Point: Video Output Connector

Adjust: RAM (07B)

Digital Board

- The menu as shown in Table 4-322 will be displayed.

PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co. CCTV PRODUCT: CS400 EEPROM: 0	
***** EVR ***** PAL	
7.2.(B).2. WB 5100K ATW LIMIT B	
VIDEO OUT <= 20 mV	

<DEVICE>	: RAM0
<ADDRESS>	: 07B
<DATA>	: 26 — 26 
<MESSAGE>	:
<INSTRUCTION> ADJUST DATA BY ARROW-KEY. ROLLDOWN: PREVIOUS ITEM	
LOAD(F1)	QUIT(F3) SAVE(F5)

Table 4-32

- Aim the Camera at the White Chart or White Paper.

- Adjust data with the **ARROW** keys so that the vector positions at the center of the Vectorscope as shown in Fig. 4-26.

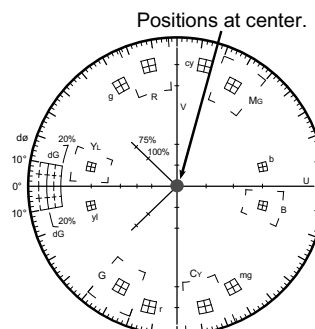


Fig. 4-26

- Repeat adjust from (28).7.2.(B).1. to (29).7.2.(B).2. until the vector positions at the center of the Vectorscope.
- Press the **ENTER** key for next adjustment.

(30).7.3.(A).1. 3200K R_Gain Adjustment

Test Point: Video Output Connector

Adjust: RAM (078)

Digital Board

- The menu as shown in Table 4-33 will be displayed.

PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co. CCTV PRODUCT: CS400 EEPROM: 0	
***** EVR ***** PAL	
7.3.(A).1. 3200K R_GAIN	
VIDEO OUT	

<DEVICE>	: RAM0
<ADDRESS>	: 078
<DATA>	: 94 — 94 
<MESSAGE>	:
<INSTRUCTION> ADJUST DATA BY ARROW-KEY. ROLLDOWN: PREVIOUS ITEM	
LOAD(F1)	QUIT(F3) SAVE(F5)

Table 4-33

- Aim the Camera at the Colour Chip Chart.
- Set the Gain Control of the Vectorscope to the Normal position.
- Return the Colour Temperature from 5,100 °K to 3,200 °K.
- Adjust data with the **ARROW** keys so that the Red gain becomes $220 \pm 5\%$ (Burst level = 100%).
- Press the **ENTER** key for next adjustment.

(31).7.3.(A).2. 3200K B_Gain Adjustment

Test Point: Video Output Connector

Adjust: RAM (079)

Digital Board

- The menu as shown in Table 4-34 will be displayed.

PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co. CCTV PRODUCT: CS400 EEPROM: 0	
***** EVR ***** PAL	
7.3.(A).2. 3200K B_GAIN	
VIDEO OUT	

<DEVICE>	: RAM0
<ADDRESS>	: 079
<DATA>	: A5 — A5 
<MESSAGE>	:
<INSTRUCTION> ADJUST DATA BY ARROW-KEY. ROLLDOWN: PREVIOUS ITEM	
LOAD(F1)	QUIT(F3) SAVE(F5)

Table 4-34

- Adjust data with the **ARROW** keys so that the Yellow gain becomes $120 \pm 5 \%$ (Burst level = 100%).
- Press the **ENTER** key for next adjustment.

(32).7.3.(A).3. 3200K R_Matrix Adjustment

Test Point: Video Output Connector

Adjust: RAM (076)

Digital Board

- The menu as shown in Table 4-35 will be displayed.

PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co. CCTV PRODUCT: CS400 EEPROM: 0	
***** EVR ***** PAL	
7.3.(A).3. 3200K R_MATRIX	
VIDEO OUT	

<DEVICE>	: RAM0
<ADDRESS>	: 076
<DATA>	: 00 — 00 
<MESSAGE>	:
<INSTRUCTION> ADJUST DATA BY ARROW-KEY. ROLLDOWN: PREVIOUS ITEM	
LOAD(F1)	QUIT(F3) SAVE(F5)

Table 4-35

- Adjust data with the **ARROW** keys so that the Red Vector Phase becomes $110 \pm 2^\circ$.
- Repeat adjust from (30).7.3.(A).1. to (33).7.3.(A).3. until both Chrominance Phase and Gain are adjusted to proper position as shown in Fig. 4-27 and Table 4-36.

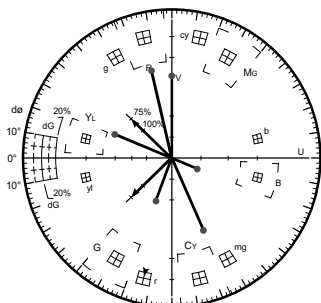


Fig. 4-27

	Red	Yellow	(Cyan)
Phase	$110 \pm 2^\circ$	$160 \pm 5^\circ$	$290 \pm 8^\circ$
Gain	$220 \pm 5 \%$	$120 \pm 5 \%$	$160 \pm 10 \%$

Table 4-36

(33).7.3.(B).1. 5100K R_Gain Adjustment

Test Point: Video Output Connector

Adjust: RAM (05C)

Digital Board

- The menu as shown in Table 4-37 will be displayed.

PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co. CCTV PRODUCT: CS400 EEPROM: 0	
***** EVR ***** PAL	
7.3.(B).1. 5100K R_GAIN	
VIDEO OUT	

<DEVICE>	: RAM0
<ADDRESS>	: 05C
<DATA>	: E4 — E4 
<MESSAGE>	:
<INSTRUCTION> ADJUST DATA BY ARROW-KEY. ROLLDOWN: PREVIOUS ITEM	
LOAD(F1)	QUIT(F3) SAVE(F5)

Table 4-37

- Change the Colour Temperature from 3,200 °K to 5,100 °K.
- Adjust data with the **ARROW** keys so that the Red gain becomes $220 \pm 5 \%$ (Burst level = 100%).
- Press the **ENTER** key for next adjustment.

(34).7.3.(B).2. 5100K B_Gain Adjustment

Test Point: Video Output Connector

Adjust: RAM (05E)

Digital Board

- The menu as shown in Table 4-38 will be displayed.

PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co. CCTV PRODUCT: CS400 EEPROM: 0	
***** EVR ***** PAL	
7.3.(B).2. 5100K B_GAIN	
VIDEO OUT	

<DEVICE>	: RAM0
<ADDRESS>	: 05E
<DATA>	: EE — EE 
<MESSAGE>	:
<INSTRUCTION> ADJUST DATA BY ARROW-KEY. ROLLDOWN: PREVIOUS ITEM	
LOAD(F1)	QUIT(F3) SAVE(F5)

Table 4-38

- Adjust data with the **ARROW** keys so that the Yellow gain becomes $100 \pm 5 \%$ (Burst level = 100%).
- Repeat adjust from (33).7.3.(B).1. to (34).7.3.(B).2. until both Chrominance Phase and Gain are adjusted to proper position as shown in Fig. 4-28 and Table 4-39.

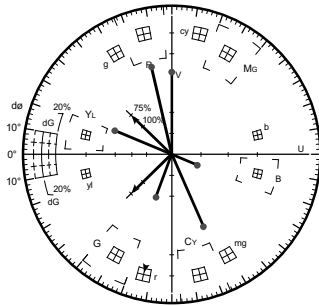


Fig. 4-28

	Red	Yellow	(Cyan)
Phase	$110 \pm 2^\circ$	$160 \pm 5^\circ$	$290 \pm 8^\circ$
Gain	$220 \pm 5\%$	$100 \pm 5\%$	$160 \pm 10\%$

Table 4-39

- Press the **ENTER** key for next adjustment.

(35).7.4. Highlight Chroma Clip Adjustment

Test Point: Video Output Connector

Adjust: RAM (09F)

Digital Board

- The menu as shown in Table 4-40 will be displayed.

PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co. CCTV PRODUCT: CS400 EEPROM: 0 ***** EVR ***** PAL	
7.4. HIGHLIGHT CHROMA CLIP VIDEO OUT	

<DEVICE>	: RAM0
<ADDRESS>	: 01F
<DATA>	: DC — DC
<MESSAGE>	:
<INSTRUCTION>	ADJUST DATA BY ARROW-KEY. ROLLDOWN: PREVIOUS ITEM
LOAD(F1)	QUIT(F3) SAVE(F5)

Table 4-40

- Aim the Camera at the White Chart or White Paper.
- Return the Colour Temperature from 5,100 °K to 3,200 °K.
- Adjust data with the **ARROW** keys so that the false chrominance level becomes minimum as shown in Fig. 4-29.

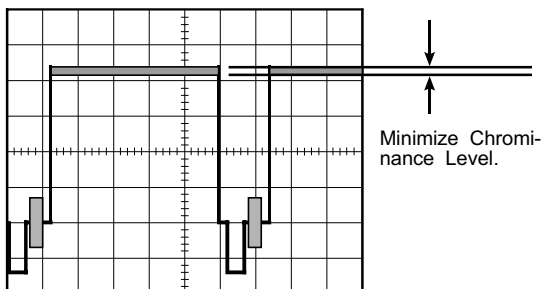


Fig. 4-29

- Press the **ENTER** key for next adjustment.

- After completing of the adjustment, press the **QUIT (F3)** key, then the menu as shown in Table 4-41 will be displayed.

PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co. CCTV PRODUCT: CS400 EEPROM: 0 ***** EVR ***** PAL	
7.4. HIGHLIGHT CHROMA CLIP VIDEO OUT	

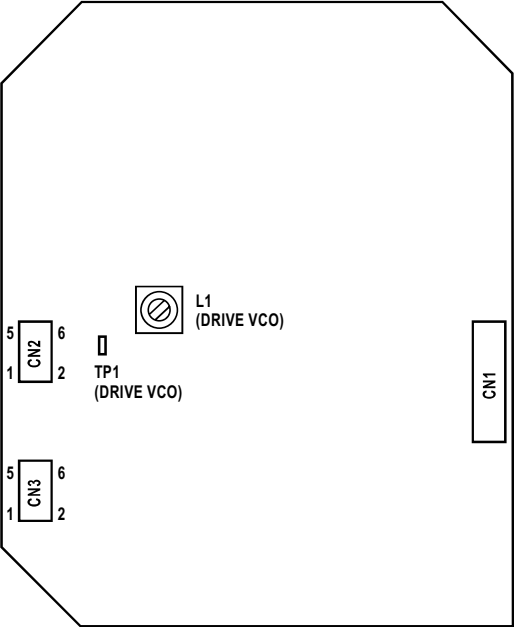
<DEVICE>	: RAM0
<ADDRESS>	: 01F
<DATA>	: DC — DC
<MESSAGE>	:
< SAVE CAMERA DATA TO FILE: EVR ? Y/N >	
LOAD(F1)	QUIT(F3) SAVE(F5)

Table 4-41

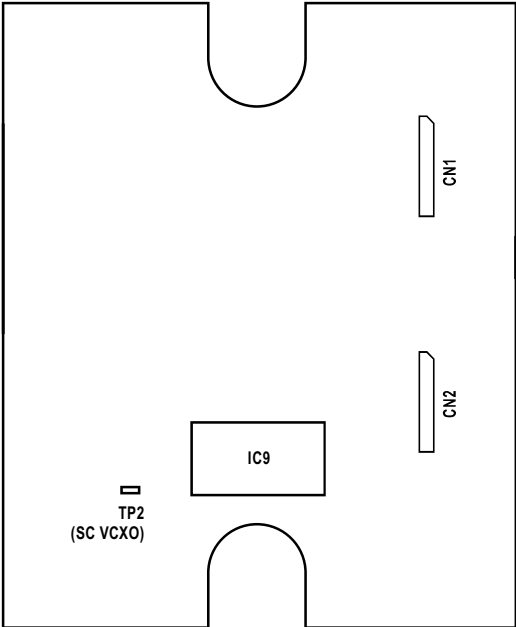
- Press the **N** key, and then press the **ENTER** key to finish of this adjustment procedure.
- Disconnect the cable from CN3 on the Digital Board.

LOCATIN OF TEST POINTS AND ADJUSTING CONTROLS

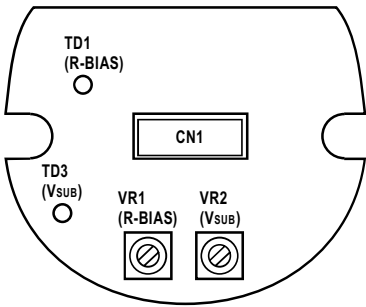
DRIVE BOARD (COMPONENT SIDE)



DIGITAL BOARD (PATTERN SIDE)

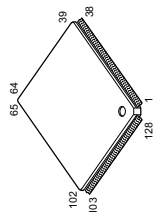


SENSOR BOARD (PATTERN SIDE)

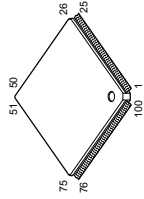


APPEARANCE OF IC, TRANSISTOR AND DIODE

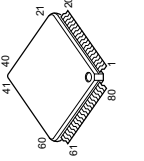
YWCF4581PGJ



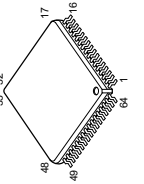
YWL7A1219



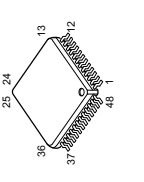
YWTMP90PK78A
MN673211M2U



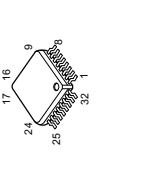
YWCXD204R



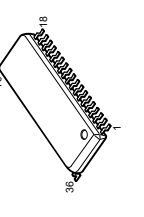
YWMB3785APF



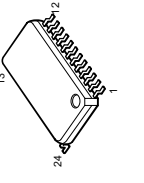
AN2034FAP
MN6576



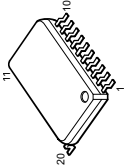
YWUPC664GS



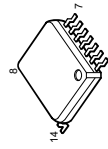
YWTB6512AF



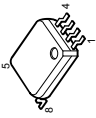
MB90077FFI04 MN3112SA
YWMB88348BEF YWC5020074E1



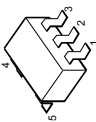
YWTCT4AT04F
YWTCT4VC04FS
YWTCT4VC74FSL



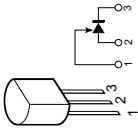
YWBR020FE1 YWFA5304P
YWNJM2904D AN2018S
YWNJM3416 YWTC4W53FUL



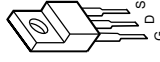
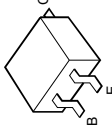
YWTCTSU32F
YWTCTSU04FUL
YWNJM2408F



YWTA76431S



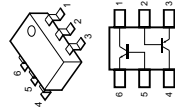
2SC2412K7 2SC4617TL
2SA1774LQRT7 2SC2412K7
2SC4619LNP17



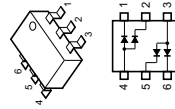
2SK1069



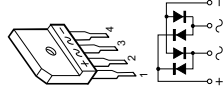
UMZ1TL



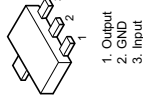
MA122



YWD4SBS6



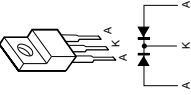
S81235PGT1



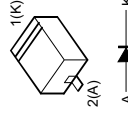
MN13821



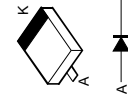
YWSF10SC9



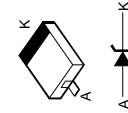
YWSC80206L



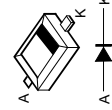
YWSC2012R



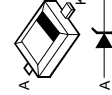
UDZ13BT7



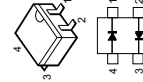
MA729



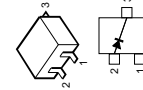
MA8091M
MA8220



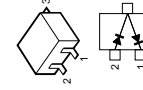
MA726



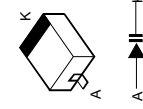
YWDA121



YWDA221
YWDAN217



YWHVU359TRF



CHIP COMPONENTS

1. Chip Transistor

The transistor number is indicated on the top surface of the chip transistor using two alphabet letters or one numerical number and two alphabet letters.



Transistor Number (Chip Transistor)

Letter	Transistor No.	Letter	Transistor No.
A	2SB709	X	2SD602A
B	2SB708A	Y	2SD601
C	2SB710	Z	2SD601A
D	2SB710A	1A	2SB799
E	2SA1022	1B	2SB814
F	2SA1034	1C	2SB902
H	2SA1035	1F	2SK321
I	2SB792	1K	2SK316
K	2SC2778	1L	2SK247
P	2SD614	1M	2S184
Q	2SD613	1N	2SK199
R	2SC2480	1O	2SK198
S	2SC2405	1T	2SC3077
T	2SC2406	1X	2SC2845
U	2SC2404	1Z	2SD1030
V	2SC2295	2B	2SK374
W	2SD602	2C	2SK116
BQ	2SB766A	UMT	2SC4081

(Small Chip Transistor) (Pair Transistor)

Letter	Transistor No.	Letter	Transistor No.	Letter	Transistor No.
A	2SB1218	SR	XN1501	5H	XP4501
B	2SB1218A	TS	XN1601	5C	XP4801
D	2SB1219A	SH	XN4501	5H	XP4801
U	2SC3931	5G	XN4601	5L	XP5501
W	2SD1820	5L	XN5501	4N	XP5601
X	2SD1820A	4N	XN6501	7S	XP6501
Y	2SD1819	5N	XN6501	7W	XP6435
E3	2SA1228	7W	XN6435	7F	XP6534
OS	2SB1219	7F	XN6534	X1	UMX1
UC	2SA1532	SR	XP1501	Z1	UMZ1
YU	2SC3938	7S	XP1601		

Example:

WQ → 2SD602-Q
YQ → 2SD601-Q
1BS → 2SB814-S

Appearance and Symbols

Transistor



C: Collector
B: Base
E: Emitter

FET



Gate
Drain
Source

	1	2	3
Except 2SK199	Drain	Source	Gate
2SK199	Gate	Drain	Source

2. Chip Diode

The diode number is indicated on the top surface of the chip diode using two alphabet letters.



Diode Number

Letter	Diode No.	Letter	Diode No.
MA	MA151A	MI	MA152K
MB	MA152A	MK	MA28W-E
MC	MA153	ML	MA28T-A
MD	MA28-A	MN	MA151WA
ME	MA28-B	MO	MA152WA
MF	MA28W-A	MT	MA151WK
MH	MA151K	MU	MA152WK
MH	MA141K	6.2	MA3062
MC	MA143	SMD	RD421D

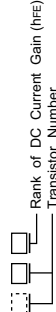
Appearance and Symbols



MA28MA28W/MA28T	1	2	3
MA151KMA152K	-	Anode	Cathode
MA151KMA152A	-	Cathode	Anode
MA151WKMA152WK	Anode	Anode	Cathode
MA151WAMA152WA	Cathode	Cathode	Anode
MA153	Cathode	Anode	Common
MA141K	-	Anode	Cathode
MA3062	Anode	-	Common
RD421D	Anode	-	Cathode

3. Chip Resistor

The resistor value is indicated on the bottom surface of the chip resistor using three digit numbers.



Example:

330 → 33 x 10⁰ = 33 Ω
561 → 56 x 10¹ = 560 Ω
123 → 12 x 10³ = 12 kΩ

Note: Zero ohm resistor (jumper chip) is colored red or green.

4. Chip Capacitor

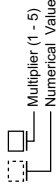
The capacitive value of replacement chip capacitors is indicated on the bottom surface. Original parts have no value indication.

If the capacitive value is less than 100 pF, the value will be indicated by one or two digit number expressing the capacity directly in pF.

Example:

0.5 → 0.5 pF 2.5 → 2.5 pF
.75 → 0.75 pF 33 → 33 pF
1 → 1 pF 82 → 82 pF

If the capacitive value is 100 pF or greater, the value will be indicated by an alpha-numeric code. The letter precedes the number and expresses a numerical value to be multiplied by the number which follows.



Numerical Value

Letter	Value	Letter	Value
A	10	N	33
B	11	P	36
C	12	Q	39
D	13	R	43
E	15	S	47
F	16	T	51
G	18	U	56
H	20	V	62
J	22	W	68
K	24	X	75
L	27	Y	82
M	30	Z	91

* Letters I and O are not used.

Example: A1 → 10 x 10¹ = 100 pF

N2 → 33 x 10² = 3300 pF

S3 → 47 x 10³ = 47000 pF

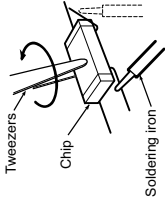
5. Precautions in replacing the chip component

1. Make sure that the unit is turned OFF when replacing the chip.
2. Use tweezers to prevent any damage to the chip surface.
3. Do not re-use the chips after removal.
4. Do not rub the electrode of chips.
5. Do not subject the chips to excessive stress.
6. It is recommended that a pencil-type soldering iron to be used.
7. The solder whose diameter is less than 0.5 mm is recommended.
8. Do not heat the chip more than 3 seconds.
9. Maintain temperature control under 260°C (500°F) when soldering.

5-1. Removal (Transistor, Diode, Resistor and Capacitor)

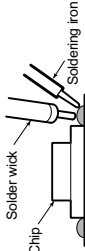
1. Add the solder to both ends of the chip (three leads for chip transistor).
2. While attaching the soldering iron to both ends of the chip (three leads for chip transistor) as shown below, remove the chip by turning with tweezers.

Note: Be careful not to damage other chips.

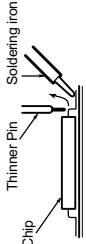


5-2. Removal (IC)

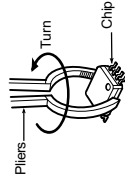
1. Add the solder wick and soldering iron to each lead of the IC and remove solder.



2. Add the soldering iron to each lead of the IC and left each lead of the IC using thinner pin.

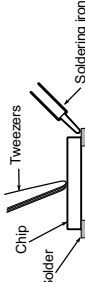


3. Remove the IC turning with pliers.

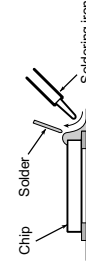


5-3. Mounting

1. Place the solder thinly on the chip mounting foil.
2. Solder the chip temporarily while holding the chip with the tweezers.



3. Solder both ends of the chip (three leads for chip transistor).



POWER BOARD

AC 220-240V 50Hz

RELAY CONNECTOR

SLIP RING

SERVO BOARD

PAN MOTOR

TILT MOTOR

DRIVE BOARD

DIGITAL BOARD

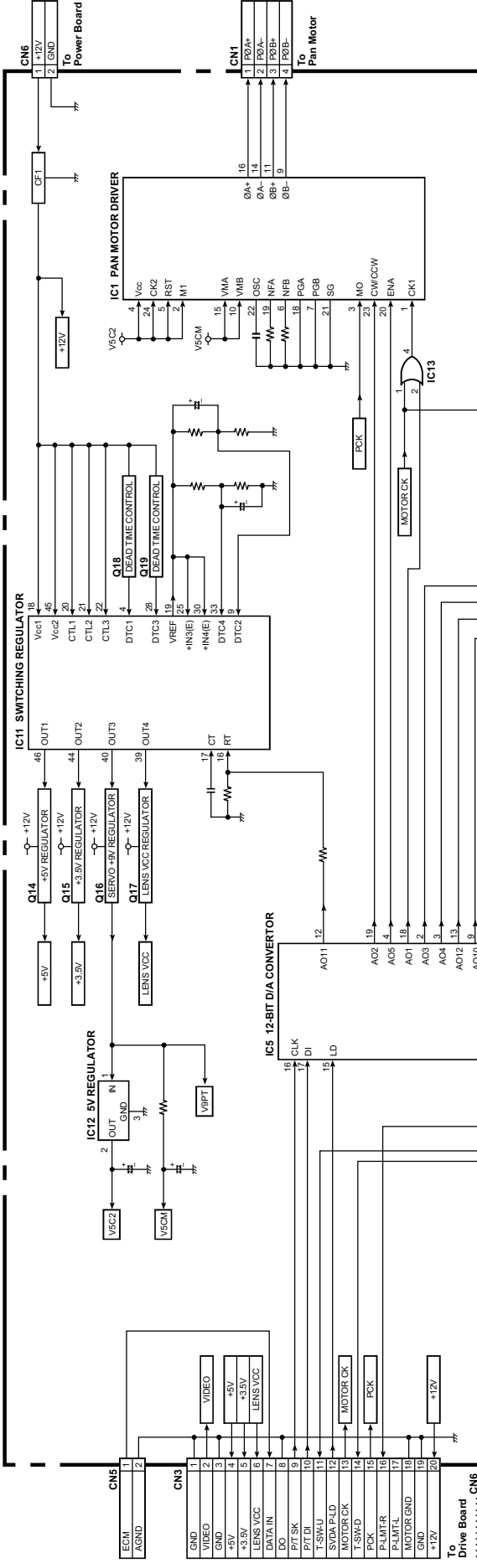
LENS DRIVE BOARD

LENS

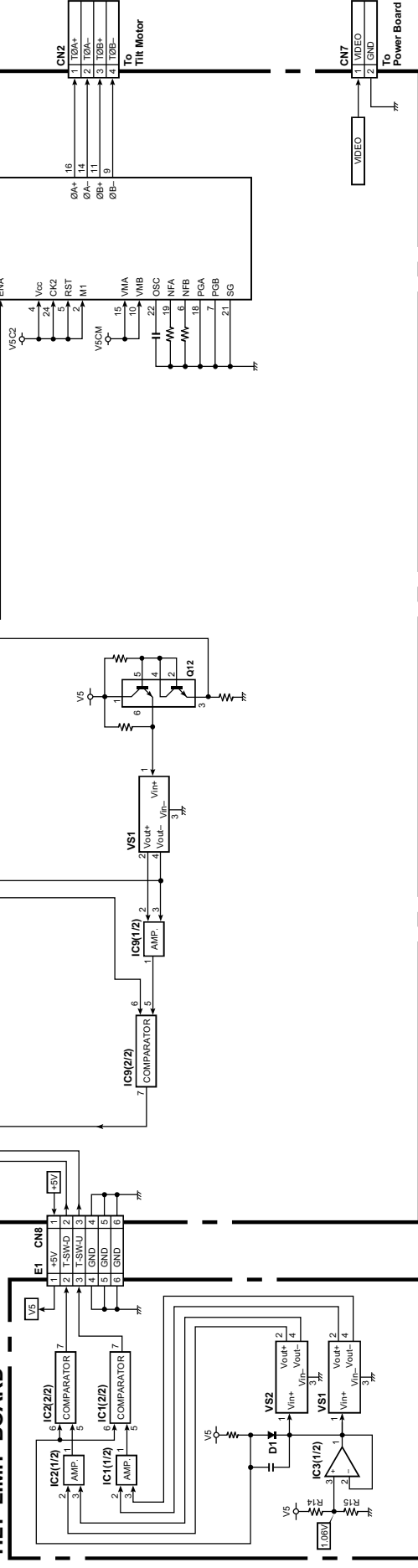
SENSOR BOARD

BLOCK DIAGRAM OF SERVO BOARD

SERVO BOARD

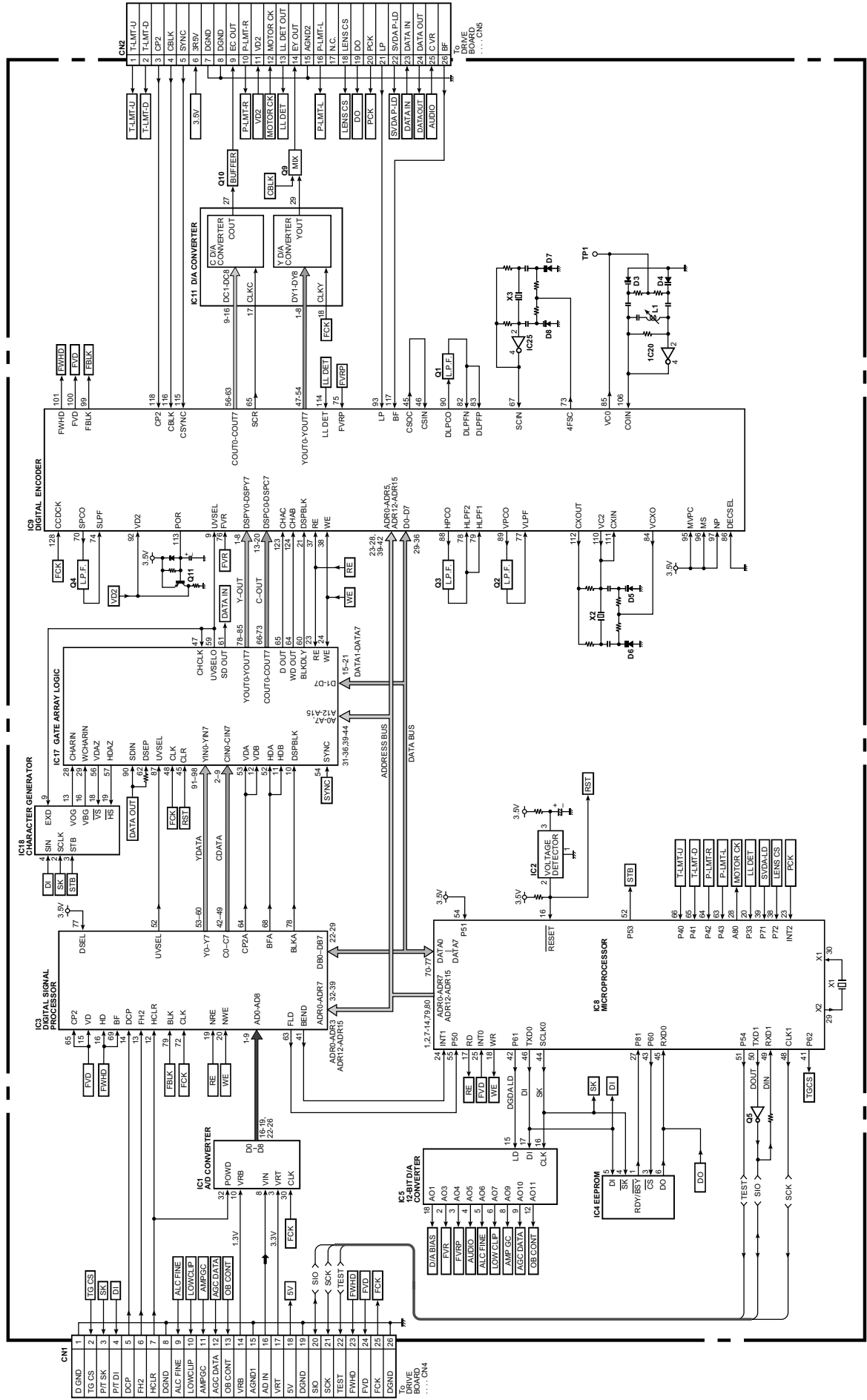


TILT LIMIT BOARD



BLOCK DIAGRAM OF DIGITAL BOARD

DIGITAL BOARD



BLOCK DIAGRAM OF DRIVE BOARD

SENSOR BOARD

DRIVE BOARD

